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ABSTRACT

The 2-year project of intensive clinical studies of children, teachers, and educational strategies was reported to be primarily concerned with characteristics of emotional behavior and cognitive functioning in children termed educable mentally retarded, assessments of learning and emotional disorders in children, effects of remediation program, and teacher characteristics and their impact on learning in children. The project report was divided into four major sections: review of literature on current theories of mental retardation and cognitive functioning, and evidence on learning disabilities and performance and behavior variance of children classified as retarded; presentation of research methodology used; presentation of clinical data based on evaluations of children and teachers the first year and remediation attempts during the second year; presentation of selected portions of group data; and summary and conclusions. Representative major findings of the study were that almost half of the 48 children scored higher on the Stanford Binet Intelligence Test than was thought possible, that learning disabilities frequently consisted of multiple, not single, intellectual dysfunctions, and that some children did not show a pre-established hierarchical order of skills. (CB)

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Final Report

Project No. 9-A-047
Grant No. OEG-1-9-090047-0112(010)

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A DIAGNOSTIC STUDY OF READING DISABILITIES OF CHILDREN ENROLLED IN SIX PUBLIC SCHOOL SPECIAL CLASSES FOR THE MENTALLY RETARDED

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

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U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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BOSTON UNIVERSITY

SCHOOL OF EDUCATION

Dissertation

CLINICAL STUDIES OF CHILDREN, TEACHERS, AND EDUCATIONAL STRATEGIES IN SELECTED PUBLIC SCHOOL EDUCABLE SPECIAL CLASSES

Submitted by

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(B.A., Denison University, 1963)
(Ed.M., Boston University, 1965)

In Partial Fulfillment of Requirements for
the Degree of Doctor of Education
1971

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CLINICAL STUDIES OF CHILDREN, TEACHERS, AND EDUCATIONAL STRATEGIES IN SELECTED PUBLIC SCHOOL EDUCABLE SPECIAL CLASSES

(Order No.)

Gail Laurene Ensher
Boston University School of Education, 1971

Major Professor: Albert T. Murphy, Professor of Education

Primary purposes of the present investigation centered on intensive clinical studies of cognitive and affective processes and teacher practices that appeared to have a substantial bearing on low academic performances and competency levels of children attending public school educable special classes, and examination of probabilities for change of those determinants of learning in children.

Over a two-year period, cognitive performances and emotional behavior of 42 children, 7-00 to 11-05 years of age at the commencement of the study, were evaluated on the basis of seven clinical tests and direct classroom observations and a diagnostic intervention program was pursued. During the diagnostic phase, the first year, a battery of tests was administered to children including the experimental version of the Illinois Test of Psycholinguistic Abilities, Detroit Tests of Learning Aptitude, Frostig Developmental Test of Visual Perception, Stanford-Binet, Bender Visual Motor

Gestalt Test, Murphy-Durrell Reading Readiness Analysis, and Durrell Analysis of Reading Difficulty. Also, weekly classroom observations and numerous tape recordings were made. On the basis of these diagnostic evaluations of children, their teachers, and educational practices, remediation strategies for individual children were conceived for implementation the second year with the intent of increasing oral and written language and conceptual abilities and auditory, visual, visuo-motor, and mnemonic functions which appeared to be contributing to learning dysfunctions. With the exception of the Stanford-Binet, which was not given in the second evaluation session, all clinical tests were readministered prior to the beginning and at the termination of the remediation program. Clinical evaluations the second year also included descriptions of classroom behavior and instructional processes.

Although the majority of children changed in substantially positive directions over the two years, data revealed that behavior among and within children was extremely variable and that patterns of performance, competency levels, and achievement gains were primarily contingent on constellations of factors including the nature and severity of specific learning disabilities, predominant cognitive strengths, emotional behavior, extensiveness of total intellectual impairment, and teacher attitudes and technological competencies. In many respects, findings ran directly counter to notions of global retardation, inability to accomplish higher-order academic tasks, unique characteristics of learning dysfunction, and static rates of knowledge acquisition in children termed "educable mentally retarded."

Findings of the study seem to hold some important implications for future research and educational practice. In particular, they emphasize the need for comprehensive descriptions of cognitive and affective behavior of children toward understanding complex learning disorders; identification and exploration of ways in which varying parameters of teacher behavior and attitudes bear on cognitive and affective learning processes in children; investigation of competency levels of performance in retarding or enhancing cognitive development; investigation of the extent and ways that fundamental abilities of children characterized by varying learning disorders are transferred to higher-order learnings in conceptual and oral and written language development; and more intensive investigations of probabilities for change in disordered cognitive development of children in response to more pervasive intervention experiences.

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CHAPTER I

PURPOSES OF THE STUDY

Introduction

Frequently associated with placement of children in public school special classes is a failure to achieve a level of expectancy on academic tasks. Until recently, primary focus of research has been directed by interest in determinations of high versus low performance. While conclusions are revealing that mental retardation exists along a widely diversified continuum, they shed little direct insight on cognitive and affective processes of children termed "mentally retarded" and on characteristics of special class settings, all of which have a substantial influence upon symbolic and conceptual development. In particular, sparse attention has been given to intensive studies of ways in which specific learning disabilities as differentiated from global incapacities, behavioral disturbances, and instructional practices affect accomplishments of language, reading, and conceptual tasks which are crucial to academic achievement. Of major importance are clinical evaluations of cognitive and affective processes and instructional practices which have bearing upon low performance of children attending special classes, and investigations of probabilities for change of those determinants contributing to low performance.

Purposes of the Study

In accordance with a central focus of intensive clinical studies of children, teachers, and educational strategies of selected public school, educable special classes, the present study had the following purposes:

(a) to differentiate and describe specific learning disabilities of children during the diagnostic phase of the study and following implementation of recommended remediation strategies;

(b) to observe and describe behavioral disturbances of children during the diagnostic phase of the study and during the course of the remediation program;

(c) to observe and describe instructional practices of teachers during the diagnostic phase of the study and during the course of the remediation program;

(d) to examine relationships among: low performance on language, reading, and conceptual tasks; extensiveness of total impairment; severities and types of specific learning disabilities; chronological age; observed behavioral disturbances; and observed instructional practices of respective teachers of children the first diagnostic year;

(e) to examine relationships among: changes in performance on language, reading, and conceptual tasks, specific learning disabilities, related intellectual functions, observed behavioral disturbances, observed instructional practices of teachers; extensiveness of total impairment; and chronological age of children the second intervention year.

Assumptions of the Study

Major purposes of the study were based on certain assumptions. These were:

(a) Specific learning disabilities of children would accompany varying degrees of mental retardation.

(b) During the diagnostic phase of the study, specific learning disabilities of children would be identifiable on the basis of low performance across numerous measures of language, reading, and conceptual abilities of children.

(c) During the diagnostic year of the study, each of the teachers consistently would reveal instructional practices that were minimally focused on educational needs of individual children in their classes.

(d) During the diagnostic phase of the study, the majority of children would reveal behavioral disturbances on the basis of class observations.

(e) During the course of the remediation program, guidance and supervision of teachers would change their instructional practices to be more in accord with educational needs of individual children.

(f) Remediability of learning difficulties would vary with the extent to which teacher practices were observed to correspond with educational needs of children.

(g) Behavioral disturbances of children which appeared to be associated with frustrations in learning would be diminished as a function of appropriately structured teaching practices.

(h) Remediation strategies would enhance specific learning disabilities of children in relation to extensiveness of total impairment.

(i) Remediation strategies would enhance associated intellectual functions of children in relation to extensiveness of total impairment.

(j) Remediation strategies would enhance general levels of language, reading, and conceptual abilities of children in relation to extensiveness of total impairment.

(k) Remediability of learning difficulties would vary with chronological ages of children; i.e., younger children would make greater gains than older children would reveal.

(l) Remediability of learning difficulties would vary with different types of disabilities.

Justification for the Study

Much research and educational practice surrounding mental retardation has been entrenched in philosophies of meager expectation. This conclusion is based on several observations. In terms of services provided by public school systems, the writer has noted that frequently children are initially placed in special classes with little regard for their particular emotional, social, or academic needs. Moreover, once placed, children are rarely afforded instruction which is diagnostically oriented toward their educational strengths and weaknesses. Many teachers appear unable or to not know how to cope with multiple problems presented by children who have been assembled together primarily on a basis of one criterion; i.e., the existence of a community class for the "mentally retarded." Subjects such as reading and mathematics are taught "from traditional points of view." Yet often, they become, in essence, monotonous drill that is massively applied to all children, is directly focused on prior sources of failure, and ignores the needs of children to develop personal autonomies in being able to act and think for themselves. Such practices may become a mockery in the guise of special education which purports to offer something unique and beneficial to children. Furthermore, they may have minimal correspondence with knowledge of child development, learning in children, and clinical approaches for teaching children who have learning and emotional problems.

Delimiting philosophies and practices concerning "retarded" children have not been confined to community agencies providing psychological and educational services. Researchers, too, appear to have maintained conceptions of mental retardation which have severely limited the range of their investigations and understandings of cognitive and affective development and learning processes of children thus classified, and of effective educational practices. For example, research on learning disabilities usually has been limited to consideration of groups of children required to demonstrate certain levels of competency on tests of general intelligence. Yet, observations consistently reveal commonalities of learning problems between children given various other diagnoses (e.g., "aphasic," "dyslexic," "emotionally disturbed," "brain-injured," and "learning disabled") and children termed "mentally retarded." Perceptual, mnemonic, language, conceptual, and other behavioral disturbances describe symptoms of children of diverse etiologies and pathologies. Researchers restricting their studies to certain highly defined clinical groups, to an exclusion of "retarded" children, tend to overlook the fact that mental retardation does not universally or identically impair all intellectual functions. Furthermore, recent definitions of retardation now maintain that such conditions are not necessarily "permanent," but reflect measurement of "current functioning." Too, in view of performance variance reported in the literature, it seems justifiable to assume that children considered to be "retarded" display a wide range of learning and behavior patterns which are indistinguishable from those of children who are judged to be "of normal intelligence."

Many studies in the field of mental retardation have oversimplified explanations of complex learning problems and have taken telescopic views of existing special education and proposed intervention programs. Failures of children on various academic tasks are reported, yet examination of underlying learning processes and severities of impairment within a totality of intellectual and psychological functioning is seldom pursued. For instance, we know little about how similar disabilities at varying chronological and mental ages differ in their degrees of impact or how different disabilities bear, in various ways, upon total intellectual and psychological functioning of children. Also, studies postulating differences between "retarded" and "non-retarded" groups of children on perceptual, mnemonic, language, and conceptual tasks have been remiss in neglecting to consider other behavioral components of performance. There are numerous reasons for failure other than intellectual incapacity. Still, differentiations have been justified exclusively on a basis of "general subaverage intellectual functioning." In the opinion of the writer, these points of view, prominent in the literature on mental retardation, have narrowed our insights to stereotyped explanations of behaviors and attributed to some children deficits which may be nonexistent or no more specifically applicable than to other learning disabled children.

Finally, in regard to studies concerned with ascertaining differences among children, one further consideration is important. It is this: Although it is well recognized that teachers and clinicians differ widely in their instructional and therapeutic approaches with children, few studies in the field of mental retardation have made recognition of this crucial aspect of program development and implementation. Special types of materials and modified program objectives do not necessarily assure that newly conceived procedures have substantially altered teaching practices from former or contrast programs. This statement is not intended to imply that biases have been introduced, intentionally or even unwittingly, into experimental designs. However, it does postulate that where children are experiencing learning and emotional difficulties, differences in teaching style may have contributed important sources of variation to performances of children across different studies. Probably in teacher-directed programs, researchers never can eliminate completely the possibility that children might change as a primary result of teacher-child interaction. Yet, these sources of variation, along with detailed explanations of presented tasks, are rarely discussed in interpretations of data.

Complexities of human behavior, variations of learning and emotional problems, and numerous other sources of influence including teacher-child interactions, all add to a researcher's difficult task of trying to understand performances of children who are not functioning in accordance with general expectations for their peers. Certainly, in one study it is impossible to be aware of or to take into account a total range of potential effects. At the same time, it does seem that in order to evaluate and begin to fathom the complexities of human behaviors, efforts of study should be devoted not only to reporting results but also to exploring, in fairly extensive ways, various sources of impact which potentially have contributed to results. Such procedures may compel the researcher to look beyond his immediate frame of reference and specific problem of investigation.

Possible Value of the Study

It is the intent of the present study to attempt to examine individual differences among children and various sources of performance variance and to reveal regularities in responses and behaviors of children. After all, such endeavors have been a concern, also, of other educational and psychological studies. On the other hand, this project, which will take a broad view of intellectual and psychological functioning of children in selected special class settings, is conceived to differ from many former studies of impaired children in the following ways:

(a) The study views children termed "mentally retarded" to be more similar to than different from children considered to be "of normal intelligence."

(b) The study views mental retardation as a condition which may be associated with specific learning disabilities.

(c) Performances of children will be evaluated on a basis of periodic assessments across numerous measures of intellectual functions over a two-year period. This procedure is expected to allow for multiple diagnoses of abilities and disabilities of children.

(d) Assessments of performances of children will include evaluations of both cognitive and behavioral aspects of functioning.

(e) Performances of children will be examined in light of instructional practices of their respective teachers.

(f) Remediation strategies will be based on a theoretical framework of child development and on the more specific educational and psychological needs of children.

(g) The study will present, in detail, conceptions underlying and examples of remediation strategies.

(h) The study will attempt to spell out the nature of changes in teaching practices during the remediation program, which may be related to changes in performances of children.

(i) The study will attempt to evaluate the remediability of learning difficulties of children in relation to a totality of intellectual functioning and class behavior.

In light of these assumptions and changes in procedures, the study is considered to have possible value in the following ways.

(a) The investigation may provide insight into the extent of variability, consistency, and multi-dimensionality of performance among children of similar chronological and mental ages who have been considered "mentally retarded."

(b) The study may give further understanding to intellectual functions of children, considered to be "retarded," and to probabilities for the remediability of their learning difficulties.

(c) The study may reveal ways in which factors other than intellectual incapacities contribute to low performances of children termed "mentally retarded."

(d) The study may provide insight into the ways that and extent to which teachers are able to change their instructional practices to be in accord with the educational and psychological needs of their children. If the study reveals that teachers are unable to alter their instructional approaches, it may shed light on some of the reasons, including certain aspects of educational systems, which appear to be responsible for these eventualities.

(e) The study may provide additional bases for new conceptions and plans of implementation of more effective remediation strategies with respect to learning-disabled children.

Definitions of Terms

1. Mentally retarded children. The present study considers children who are termed "mentally retarded" to be a part of and, in many respects, to be indistinguishable from a large number of learning disabled children. In light of the fact, however, that most administrative agencies and current theorists take another view of mental retardation and the fact that placements of children in special classes are chiefly reliant upon such a view, this criterion will be presented below. In relation to the present study, this description does not preclude the possibility that current functioning of children in the sample may deviate, to a considerable extent, from this widely accepted basis for special class placement. Moreover, the present study assumes that specific learning disabilities and behavioral disturbances may contribute to "general" inabilities of children to succeed on academic tasks.

The Report of the Massachusetts Mental Retardation Planning Project (1966) has described children in public school, educable special classes as follows.

> . . . [They] function at the time of school evaluation: on a psychometric level (as measured by standardized and clinical tests) that is characterized by general inability

> *to succeed in school-related tasks; on an academic achievement level (as measured by standardized and informal tests) significantly below average age performance; without necessarily being impaired in either maturation or school adjustment; and, insofar as is determinable, with learning limitations not associated with symptoms of primary personality or sensory deterioration*. Usually such children will receive a score of from 50 to 79 on the intelligence tests approved by the Departments of Education and Mental Health and administered by an examiner approved by said departments. In exceptional cases other children whose educational needs, in the opinion of the superintendent of schools and subject to the approval of the Department of Education, will be best served by this classification, may be so classified (p. 73).

2. *Learning disabled children*. This study conceives of learning disabled children as being characterized by a wide range of dysfunctions of one or more basic intellectual processes which are manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic (National Advisory Committee on Handicapped Children, 1968). In contrast to most currently held conceptions of learning disabled children, this study takes a broad view of the term to include children who have been variously labeled with such specific terms as "aphasic," "dyslexic," "minimally brain-injured," "perceptually handicapped," and "mentally retarded." Such a conception, which recognizes the fact that children will vary considerably in the degrees and types of their impairments, is based chiefly upon accurate descriptions of psychological disturbances rather than upon etiological classifications.

3. Specific learning disabilities. In this study, specific learning disabilities were qualified in one or both of the following aspects of intellectual dysfunctioning: (a) impairment of single functions, and (b) impairment of an integration or association of processes. Such disabilities were designated where one or more single functions or combinations of functions were consistently revealed to be below relative positions of a majority of other intellectual functions and the expectancy age level of individual children (i.e., mental age as measured by the Stanford-Binet) on the basis of learning profiles compiled from performances across numerous clinical tests.

4. Behavioral disturbances. Children were described as having behavioral disturbances where, on a basis of frequent observations, their classroom behaviors consistently revealed the following characteristics which appeared to interfere with learning processes and/or relationships with peers and authority figures:

(a) excessive distractibility and inattentiveness (e.g., child may appear to be unusually disturbed by auditory or visual stimuli, unable to remain oriented to any one task for a period of more than 10 minutes);

(b) excessive hyperactivity (e.g., child may be liable to constant room wandering and excessive movement, which does not appear to originate from an obvious motoric impairment, constant touching of objects and other children, constant verbalizations);

(c) excessive anxieties and low levels of tolerance (e.g., child may manifest symptoms such as frequent crying, resistance to learning tasks, inabilities to accept judgment of peers and authority figures, frequent overreactions to many situations, and withdrawal from participation in activities).

Designations of disturbances were based on descriptions of behaviors rather than on etiological classifications. These disturbances were conceived to arise from multiple origins of which some were expected to be more easily and directly diminished than others.

5. Intellectual functions. Intellectual functions are conceived as complex adaptive activities directed toward accomplishments of psychological tasks (Luria, 1966). It is postulated that such functions will vary with ontogenic stages of development, internal neurological and psychological states, and environmental influences including specific task requirements. Performances on different clinical tests were assumed to represent different predominant intellectual functions. Whenever adaptive activities or functions, which are known to vary among individuals (Luria, 1966), reveal performances that do not appear to be commensurate with certain expectancy levels, these functions are considered to be impaired. Subsequently, whether these functions are designated as

learning disabilities depends, to a large degree, upon the extent of their interferences with learning activities.

In the present study, intellectual functions, which may be described in various ways according to different combinations of activity, will include:

(a) Conceptual functions. Broadly conceived, conceptual functions refer to a wide range of organizational strategies which individuals bring to bear on different problem-solving situations. As mental development proceeds in a direction of more efficient information processing, conceptualization, which underlies all intellectual functions, is characterized by increasing abilities of children to comprehend, analyze and synthesize, categorize, draw relationships and associations, generalize, and evaluate in accordance with specified task objectives. The present study will be concerned with selected aspects of each of these abilities in particular relation to language and reading functions. Conceptual functions will constitute one major focus of the remediation program.

(b) Symbolic functions. Symbolic functions refer to an individual's strategies for representing objects, events, and experiences which are removed from his immediate situation. Like conceptualization, symbolic functions take different forms (e.g., action, imagery, and language) and include many other intellectual functions and processes. While this study concurs with the widely held view that symbolic functions are largely supported by conceptual functions, this position does not preclude a possibility that disturbances may occur in specific aspects of either of these two central functions.

The present study will concentrate on certain combinations of intellectual processes which are conceived to be vital to language and reading. Symbolic functions will constitute a second major focus of the remediation program.

(c) Visual functions. Visual functions refer to processes of sensation, discrimination, and comprehension of visual stimuli. These functions, which include such activities as examinations of visual stimuli, differentiations of essential features, determinations of relationships among essential features, and integrations of essential features into patterns (Luria, 1966), require several abilities. Among these are figure-ground discriminations, determinations of positions in space, and form and size constancies.

Although visual functions are assumed to involve processes of comprehension and association, they are distinguished in this study from more complex visual receptive language functions which are conceived to include interpretations and recall of visual stimuli. In particular, visual functions are viewed as foundation processes for visual receptive language functions.

(d) Visuo-motor functions. Visuo-motor functions refer to integrations of visual and motor functions. Such integrations require a "transduction" of visual information to the motor system. Impairments, therefore, reflect disturbances in an association of systems, in contrast to specific disabilities in single visual or motor functions (Johnson & Myklebust, 1967).

Visuo-motor functions involve orientations in space which require such determinations as "sense of direction" (e.g., up and down, and right and left). Luria (1966) points out that spatial orientation requires not only simultaneous visual perception (i.e., visual functions) with the participation of differential eye movements, but also vestibular synthesis and analysis and kinetic stimuli from the dominant upper limb (p. 365). Hence, these functions represent more complex processes and appear later in the schema of child development than visual functions.

(e) Auditory functions. Auditory functions refer to acuity, localization, discrimination, recall, and comprehension of auditory stimuli. Like visual functions, auditory functions require identification and differentiation of essential (phonemic) and inhibition of unessential signs of language systems (Luria, 1966).

Auditory functions are distinguished in the present study from auditory receptive language functions which are considered to be more complex processes and to require interpretation and comprehension of spoken language.

(f) Mnemonic functions. Mnemonic functions refer to storage, organization, and recall of information over greater to lesser periods of time. Since impairments in mnemonic processes, simultaneously, constitute impairments in associated sensory and information processes (Luria, 1966), the specific character of such disturbances varies considerably.

Insofar as they appear to have specific bearing on symbolic and conceptual functions on the basis of diagnostic evaluations, visual, visuo-motor, auditory, mnemonic functions will comprise a third major focus of the remediation program.

Plan of the Remaining Chapters

This project is concerned with a study of intellectual processes and behavior of learning disabled children over a two-year period. It is considered to be largely differentiated from a majority of investigations in the field of mental retardation in terms of its underlying assumptions about children who have been classified as "mentally retarded" and in terms of its methodological, case study approach toward understanding learning disturbances.

The remaining five chapters will elaborate, in detail, the writer's conceptions of intellectual functioning and behavior of learning disabled children, and will relate these theoretical positions to specific diagnostic and remediation strategies, results, and apparent implications of the study. The chapters thus will contain: (a) a review of the literature on prevailing conceptions of mental retardation and cognitive functioning, and evidence on learning disabilities and performance and behavior variance of children who have been classified as "retarded"; (b) presentation of rationales for and discussion of methods and procedures employed and modified over the two-year period; (c) presentation of clinical data based on evaluations of children and teachers the first year and remediation attempts during the second year, including selected case studies of children and their teachers; (d) presentation of selected portions of group data; and (e) summary and conclusions which will deal principally with an evaluation of insights contributed by the study.

CHAPTER II

REVIEW OF THE LITERATURE

It is the intent of the present chapter to review and discuss literature pertinent to learning difficulties of children who have been classified as "mentally retarded." The chapter will include four major sections: (a) Conceptions of Mental Retardation; (b) Conceptions of Cognitive Functioning; (c) Mental Retardation and Learning Disabilities; and (d) Mental Retardation and Performance and Behavior Variance. Hopefully, these considerations will reflect salient issues that are related to other conceptions of mental retardation and findings of prior investigations and thus will serve to clarify rationales for theoretical assumptions and methodological procedures of the present study.

Conceptions of Mental Retardation

Over the past 50 years, conceptions of mental retardation have varied considerably. Changing points of view, which appear to be similar to controversies over other "clinical groups" that have been isolated from the mainstream of humanity on a basis of "deviancy," have reflected differences of opinion on many issues. Specifically, differing positions have centered on such questions as: (a) criteria defining mental retardation, and the relative importance of cognitive, affective, social, and etiological factors as determinants of disabilities; (b) bases of clinical evaluations of mental retardation; (c) the relativity of mental retardation in different settings and over extended periods of time; and (d) prognoses and probabilities for change of various learning difficulties of "retarded" children. Several fairly recent and extensive sources on mental retardation (Clarke & Clarke, 1958; Robinson & Robinson, 1965; Sarason & Doris, 1969; Sarason & Gladwin, 1958; Stevens & Heber, 1964) have stressed the importance of maintaining an open-mindedness toward such issues and reflect the tentativeness of our present understanding of mental functioning of children who have been classified as "retarded." Yet, other points of view represented by numerous conceptions and studies have not been wholly consistent with this position.

Discussion in the present section will focus on each of the four, aforementioned issues in an attempt to reveal recent conceptions of mental retardation and their underlying implications for directions in research and psychological and educational practices with certain children.

Criteria as a Basis for Defining Mental Retardation

Criteria defining mental retardation have been variously based on cognitive, affective, social, and etiological factors. Complex issues have been associated with dependence on each of these allegedly central determinants of mental retardation. Problems are not surprising. They stem from such sources as: (a) attempts to apply "pure" criteria to wide and continuous dimensions of disabilities of children (Garfunkel, 1964); (b) controversies over such issues as the nature of intelligence and individual differences (Hunt, 1961; Jenkins & Paterson, 1961), qualifications of social incompetence (Sarason, 1959), the uniqueness of behavioral disturbances accompanying mental retardation (Pollack, 1958), and the nature of interactions between organic and environmental factors affecting behavior of children (Heber, 1961; Knobloch & Pasamanick, 1960; Sarason & Gladwin, 1958); and (c) interpretations and implications of theoretical criteria for administrative and educational practices with children.

The criterion of "subaverage general intellectual functioning". While some theorists have placed emphasis on restricted criteria, others have been more inclusive in their conceptions of conditions constituting mental retardation. In either case, undoubtedly, the most widely held views of mental retardation have been based primarily on, or at least have included, specification of "subaverage general intellectual functioning" (Benton, 1964; Heber, 1961), which is qualified by psychometric examinations on standardized intelligence tests (Massachusetts Mental Retardation Planning Project, 1966). Underlying acceptance of this criterion as a significant indicator of mental retardation is an assumption of the "pervasiveness" of disabilities across all intellectual functions (Benton, 1964), as distinguished from more specific learning difficulties (National Advisory Committee on Handicapped Children, 1968).

The validity of using general intellectual dysfunctioning as an independent criterion, although commonly accepted, has been called into question by several writers. For example, Jastak (1949) has argued that IQ is not representative of general abilities of individuals and has suggested, instead, that highest scores among assessments of an array of abilities approximate more closely intellectual potentials. Other writers have abstained from criticisms of the validity of IQ and intelligence test scores per se, but have raised questions about the justifiability of placing children into certain etiological categories, which appear to have little diagnostic value (Brabner, 1967), and which are based on a single criterion; i.e., an IQ score (Garfunkel, 1964; Sarason & Doris, 1969).

The latter criticism appears to be especially pertinent in light of yet common misinterpretations of intelligence test scores. In particular, it has now been demonstrated that measurements of intelligence are subject to many variations and do fluctuate over the course of an individual's lifetime (Guilford, 1967; Hunt, 1961; Pinneau, 1961). On the other hand, recognition of this fact often is not evident in relation to conceptions of children who have been classified as "retarded." The recent definition of mental retardation (Heber, 1961), adopted by the American Association on Mental Deficiency and the National Institute of Mental Health, takes a view which runs counter to an assumption of "incurability" (Doll, 1941, 1947). It states that:

> Within the framework of the present definition mental retardation is a term descriptive of the current status of the individual with respect to intellectual functioning and adaptive behavior. Consequently, an individual may meet the criteria of mental retardation at one time and not at another. A person may change status as a result of changes in social standards or conditions or as a result of changes in efficiency of intellectual functioning, with level of efficiency always being determined in relation to the behavioral standards and norms for the individual's chronological age group (p. 4).

In spite of this position and contentions of writers who support an environmentalistic point of view (Blatt & Garfunkel, 1965; Hunt, 1961; McCandless, 1964), conceptions of genetically determined, fixed intelligence and a belief in predetermined development still persist. This conclusion is based on evidence of recent articles of writers (Jensen, 1969; McClearn, 1962; Zigler, 1969) who maintain that the extent to which intelligence can be incremented is of practically negligible or minimal consequence. Too, these conceptions are seen as underlying a statement by Clausen

(1967), who advocates exclusive reliance on a psychometric criterion of mental retardation. He has written: "If a psychometric definition of mental deficiency should be adopted, this would perhaps require some modification of the present assumptions about the IQ concept" (p. 742).

In spite of Clausen's conclusion that a psychometric definition constitutes the most efficient and precise approach, his argument reveals certain weaknesses. In response to Sarason and Gladwin's argument (1958) that such approaches serve to confuse characteristics of children rather than to facilitate understanding, Clausen contends that the psychometric definition should not be rejected on a basis of the "rigidity of the examiners." It is doubtful that conservative views are restricted to biases of clinicians. Prevailing conceptions have had and continue to have a substantial bearing on developments in research and on educational practices with children; e.g., special class placements (Sarason & Doris, 1969). Furthermore, specific to Clausen's rationale for his conception, selection of a particular approach for definition or classification on the ground that it "affords the most logical structuring of data" does not appear to be a tenable position. As some writers have pointed out (Sarason & Doris, 1969; Zigler, 1966a), one of the most formidable problems which has confronted workers in the field of mental retardation has been the lack of a comprehensive theory of "intellectual structure and development" which might serve to forge the gap between theory and practices of psychological assessment.

In regard to the relative importance of the criterion of "subaverage general intellectual functioning," the writer takes the following view. It is this: There is a considerable difference between a primarily "psychometric" approach and a more thoroughgoing approach to "cognitive and behavioral" evaluations, which may include tests of general intelligence but places greater emphasis on other sources of diagnostic information. For children who are experiencing moderate to severe learning difficulties, clinical examinations are most helpful. On the other hand, the writer would agree with those sources who contend that exclusive reliance on psychometric evaluations afford, at best, incomplete bases for accurate diagnosis. If our rationales for assessment are to extend deeper than superficial relegations of children to certain categorical groups for administrative purposes, other sources of information must be tapped.

The criterion of "impairment in adaptive behavior." Mental retardation has been defined frequently in accordance with a second criterion; i.e., "impairment in adaptive behavior" (Heber, 1961). This criterion assumes particular importance in light of the view expressed by Maher (1963):

> What constitutes mentally retarded behavior depends to a large extent upon the society which happens to be making the judgment. An individual who does not create a problem for others in his social environment and who manages to become self-supporting is not defined as mentally retarded no matter what his test IQ may be. Mental retardation is primarily a socially defined phenomenon, and it is in large part meaningless to speak of mental retardation without this criterion in mind (p. 238).

Maher's statement suggests that designations of mental retardation, after all, are qualified largely by judgments and evaluations of "impairment in adaptive behavior." It also implies, however, that such judgments and evaluations are far from clear-cut determinations.

The designation of mental retardation on the basis of a criterion of "impairment in adaptive behavior" involves problems of definition and psychological assessment. Although several writers (Garfunkel, 1964; Heber, 1961; Robinson & Robinson, 1965; Sarason & Doris, 1969; Sarason & Gladwin, 1958) have agreed to the importance of multiple criteria for evaluation which would include assessments of behavior and, hence, this criterion, these and other authors (Clarke & Clarke, 1958; Cook, 1966; Heber, 1962; Zigler, 1966a) have pointed out the fact that objective measures of adaptive behavior are not yet available. Furthermore, interpreted in specific terms in the current definition of mental retardation (Heber, 1961) as impairment in maturation, learning, and/or social adjustment, the criterion is open to considerable debate. One point of difficulty arises from the fact that the three qualifying conditions of the criterion are not exclusive to children classified as "mentally retarded" (Benda, Farrell, & Chipman, 1951; Garfield, 1963; Garfunkel, 1964; Menolascino, 1965; Murphy, 1964; Pollack, 1958). They represent characteristics across several clinical groups. Second, the three qualifying conditions of the criterion appear to be especially liable to relative judgments which might vary considerably with different standards across communities. Although some variations in evaluation are to be expected, decisions made on the basis of these defining criteria, which lack specific descriptions of behavior, run the risk of being diagnostically and therapeutically unsound. Third, it seems reasonable to assume that general social norms for judging behavior might attribute differential importance to maturation, learning, and social adjustment; and these criteria might be expected to vary with different chronological age groups. Thus, in relation to many children, a classification of "mental retardation" would appear to be essentially a "transient phenomenon" (Garfunkel, 1964) which serves primarily a social, administrative, and legal function (Clarke & Clarke, 1958; Heber, 1962; Maher, 1963), rather than a scientific, educational, or therapeutic one. For some of these reasons, adherence to the view that a classification of "mental retardation" should be based solely on a criterion of social incompetence or social maladjustment (Tredgold, 1952) has been severely criticized (Heber, 1962; Sarason & Gladwin, 1958; Zigler, 1966a).

In addition to problems of definition and psychological assessment, the use of a criterion of "impairment in adaptive behavior" bears other difficulties of interpretation. Based on several sources (Beier, 1964; Garfield, 1963; Robinson & Robinson, 1965; Sarason & Doris, 1969), there appears to be support for the contention that "retarded" children reveal high incidence of social and emotional disturbances. In general, conceptions and studies have been involved with discerning relationships between mental retardation and social and emotional disturbances, and have focused on the issue from several points of view. These have included assumptions that: (a) behavioral disorders among children are manifestations of pathological states or dysfunctions of an organic nature; (b) behavioral disorders among children are reflections of repeatedly experienced frustrations and failure; (c) "retarded" children are primarily emotionally disturbed; and (d) "retarded" children are unable to make judgments appropriate to social situations and, therefore, display bizarre behaviors (Beier, 1964). In relation to each of these assumptions, however, there is considerable disagreement on such questions as the extent of available supporting evidence (Gardner, 1966), and the nature of particular manifestations and rates of incidence of disturbances among "retarded" children (Garfield, 1963). As in other reports on the incidences of impairments and pathologies supposed to be associated with mental retardation (Gruenberg, 1964; Matthews, 1957), some of these questions are almost irresolvable because findings vary with so many factors.

To an extent, each of the assumptions above are related to a question of the etiologies of maladaptive behaviors. On this issue, the position of the current AAMD definition (Heber, 1961) is that mental retardation may result from heterogeneous conditions. Few writers in the field of mental retardation would disagree with this conception. However, in considering the social adjustment of children termed "mentally retarded," the use of a criterion of "impairment in adaptive behavior" to define mental retardation may prove to be somewhat confusing. In particular, it is possible that a substantial number of impairments in adaptive behaviors are symptomatic of conceptions of mental retardation and the impact of the community on certain children, rather than reflective of behaviors particularly unique to certain disabilities, neurologic dysfunctions, or conditions of mental retardation. The fact that numerous studies have been variously concerned with investigating the social and emotional adjustments of children classified as "retarded" in different settings may lend some support to this contention. Specifically, studies have dealt with: (a) explanations of "the adaptive significance of commonly described behaviors" of "retarded" children (Hirsch, 1959); (b) the social adjustments of children in special and regular class settings (Blatt, 1958; Enos, 1961; Kern & Pfaeffle, 1963; Goldstein, Moss, & Jordan, 1965); (c) the self concepts of "retarded" children (Maher, 1966; Meyerowitz, 1962); (d) expectancies, incentives, and motives of "retarded" children in risk-taking "performance" situations (Atkinson, 1958; Cook, 1966; Cromwell, 1961, 1963; Gruen & Zigler, 1968; Zigler, 1966a, 1966b; Zito & Bardon, 1969; and (e) emotional disturbances of "mentally retarded" children (Menolascino, 1965; Pollack, 1958; Sarason & Doris, 1969).

Although not all are consistent in their views and findings, these reports point to the notion that classifications of "mental retardation" may have serious implications for children which extend far beyond attendance of certain educational programs. For example, to a much greater extent than children who are considered to be "normal," children termed "retarded" may experience separation, rejection, isolation, and ridicule. These factors would be expected to have a substantial impact on the behaviors of all human beings, not only "retarded" children. The likelihood that children so classified elicit more negative and pessimistic attitudes and responses from others represents one factor that may contribute to increased probabilities of social and emotional difficulties of some children.

The contention here is not intended to mean that all impairments in adaptive behaviors are attributable to "labeling" or depressing community attitudes, or that all emotional and social disturbances could be eliminated with a change in terminology. Such a position would be simplistic in light of the fact that behaviors of children with learning problems and their "caretakers" are products of dynamic interactions. Further, very serious and complex problems have been known to arise in some situations prior to any "active" awareness that children may not be responding "normally." Reactions of children, for largely unknown reasons, may trigger certain responses in those of their immediate environments which may be deleterious to cognitive and/or affective developments (Bettelheim, 1967). However, with regard to children who have been designated as "retarded," the major point is this: Recognitions of mental retardation usually result in certain community actions. As much as we might like to believe that our views of learning problems are altruistic and worthwhile, our conceptions most often involve various ways of removing certain children from the mainstream of many activities in which other children participate. Such courses of action may not always be warranted or desirable to an extent that is presently and widely maintained.

Moreover, they may be responsible for engendering certain emotional problems in young children (Meyerowitz, 1962). Thus, in a sense, "a diagnosis of mental retardation" may serve to reinforce the very criteria upon which such judgments initially were made.

With regard to the two other defining criteria qualifying "impairments in adaptive behavior," i.e., maturation and learning, there are similar difficulties of interpretation. To greater or lesser degrees, many children who have learning disabilities will reveal maturational lags (Ames, 1968, 1969) and slower rates of learning.

Much of this section on criteria defining retardation has been concerned with problems of classification. In large part, these difficulties have resulted from ways in which some researchers, theorists, clinicians, and administrators have conceived of certain psychological and educational terminologies in relation to current functioning, development, and potentials for change in certain human beings. To clarify a specific point, although impairments in adaptive behaviors are difficult to understand, measure, and interpret, considerations of emotional and social behaviors of children should not be minimized. They are vital to preventive measures and diagnostic and remediation practices. However, when evaluations of adaptive, as well as intellectual, functions are reduced to criteria on which legal and social classifications and judgments are made, they are confusing and possibly damaging to children. Also, in the opinion of the writer, learning and emotional problems of children are much too complex to be placed under a single criterion or dual criteria defining conditions of mental retardation. Such criteria probably tell us little more than initial observations; i.e., that a particular child was experiencing learning and/or emotional difficulties.

A comment by Sarason and Doris (1969) on the consequences of the diagnostic process is pertinent to much of the discussion above on the value of criteria for classification. They have written:

> It cannot be overemphasized that diagnoses give rise to actions, which is but another way of saying that they influence the lives of individuals. The fact that the diagnostic process is taking or has taken place bespeaks the existence of questions pertaining to an individual's present and past behavior, i.e., the process is a form of problem solving the immediate aim of which is to understand the ways in which the questions may be related to each other. The diagnostic process is never directed to a simple question (e.g., Is the individual retarded?) to which there is a simple answer, but it is rather directed to a series of questions about an individual's behavior and performance. But the diagnostic process is not an intellectual exercise devoted to questions about present and past behavior. It is a process undertaken with the explicit aim of providing a basis for recommended actions and this aspect of the process should never be handled lightly precisely because the recommended actions can forever affect the life of another person. This statement, we hope, will not be viewed as an expression of mere sentiment or undue concern but rather as a statement of what truly occurs in real life. When one removes a child from a regular classroom, when one decides not to

> recommend a child for a preschool program, when one suggests institutionalization, when one concludes that a child cannot benefit from certain interpersonal or group experiences--when these and other kinds of decisions follow upon the diagnostic process it is obvious that one is influencing decisively the lives of other people. We are not concerned here with the rightness or wrongness of such recommendations but with the fact that decisions to act or not to act in certain ways are fateful for the lives of those we are trying to help (pp. 27-28).

Etiological factors. Underlying many conceptions and studies of psychological disorders of children are considerations of etiological factors. Broadly conceived, these factors may be viewed as a totality of neurological, psychological, and environmental influences in the life of an individual which has bearing on his current performance and behavior. Although conceptions of etiological agents in relation to mental retardation are not necessarily dissonant with this position, they tend to be more specific. From both viewpoints, however, considerations of etiology are important in that they may provide direction for medical, therapeutic, and educational courses of action toward prevention and remediation of psychological dysfunctions. Since assumptions about etiological factors have been closely tied to criteria and definitions of mental retardation, these conceptions are included in the present section.

Many writers concerned with the nature of mental retardation (Doll, 1947; Kanner, 1949; Lewis, 1933; Sarason & Doris, 1969; Strauss & Lehtinen, 1947; Zigler, 1966a, 1969) have advocated distinguishing between two groups of children on a basis that "primary" etiologies respective to the groups are essentially different. One of the groups has been variously termed "brain-injured," "mentally deficient" (Doll, 1947), "pathological type" (Lewis, 1933), "absolute feebleminded" (Kanner, 1949). The other group has had such references as "cultural-familial," "mentally retarded" (Doll, 1947), "subcultural type" (Lewis, 1933), and "relative feebleminded" (Kanner, 1949). Diverse and changing theories of etiological factors associated with various intellectual and behavioral dysfunctions reflect that conceptions of both groups have been the center of considerable controversy. For example, some writers have maintained that all conditions of mental retardation involve neurophysiological abnormalities (Benoit, 1959; Luria, 1963). Meanwhile, others have taken an increasingly prevalent position, that while some children are retarded as a result of organic factors (i.e., genetic anomalies; metabolic disorders; and brain injuries incurred prior to, during, or following birth), there is an apparently larger group of "retarded" children in whom it is postulated that "psychogenic" and "psychosocial" factors (Heber, 1961) are primarily responsible for subnormal functioning. In contrast to an earlier conception (Heber, 1959), more recent views of this larger group leave open the question of the "relationship between genetic and cultural factors" (Heber, 1961).

Such observations and assumptions of etiological differences between the two groups of children have sparked further efforts to demonstrate corresponding psychological differences. These conceptions are evident in many studies including investigations of differences between groups on performance (e.g., perceptual and conceptual) tasks (Halpin & Patterson, 1954; Osborn, 1960; Rossi, 1963; Weatherwax & Benoit, 1962) and investigations of behavioral differences between the groups (e.g., the extent of distractibility) (Cruse, 1962). In general, however, such studies have not revealed overwhelming consistencies (Robinson & Robinson, 1965; Sarason & Doris, 1969). Undoubtedly, this finding is indicative of several factors including the following considerations:

(a) Children classified in accordance with these two etiological groups are extremely heterogeneous (Birch, 1964; Robinson & Robinson, 1965; Sarason & Doris, 1969).

(b) Knowledge of initial impairment is not sufficient to explain the nature of relationships and interactions among variables underlying current performance and behavioral dysfunctions of children. The clinician and researcher are constantly faced with a problem that etiological agents, such as "brain injury" and "cultural deprivation," represent multiple combinations of variables which have differential effects on individual children (Birch, 1964; Diller & Birch, 1964; Eisenberg, 1964; Sarason &

Doris, 1969).

(c) Manifestations of learning and behavioral dysfunctions reflect not only initial impairments but a wide range of adaptations (including progressive and regressive reactions) in response to impairments (Diller & Birch, 1964; Sarason, 1964). Thus, focusing on more limited aspects of initial impairments may reveal little of extensive involvements of certain disorders in the total complex of a child's cognitive processes and behavior.

(d) In addition to the above difficulties, there have been further complications in that terminologies have been defined in different ways by various researchers and clinicians; e.g., the concept of "minimal brain damage" (Birch, 1964).

These issues are relevant to interpretations of current classifications and conceptions of the nature of mental retardation. In particular, it is evident that although etiological factors have not been designated specifically as a criterion of mental retardation, they have largely influenced conceptions of the nature of mental retardation and present classifications. As mentioned earlier in Chapter I and the beginning of the present section on criteria, conceptions of mental retardation have tended to be pessimistic in terms of expectations for change in children. To an extent, these conceptions have varied with respect to different etiological groups. For example, writers have made frequent reference to certain etiologies that have been associated with greater to lesser degrees of mental retardation (Heber, 1961; Kanner, 1949; Robinson & Robinson, 1965; Sarason & Doris, 1969), and therefore different levels of expectancy for change. In large part, such prognoses have been based and justified on observations and evaluations of severities of cognitive and affective dysfunctions in children suspected of having or known to have experienced certain environmental or physiological insults. At the same time, however, generalizations about many etiological agents which are little understood and which are assumed to eventuate, automatically, in certain ranges of mental retardation seem to be extremely hazardous. Moreover, where such generalizations include assumptions about probabilities for change, these projections may reflect more accurately the current status of innovations in teaching children, rather than actualities of resistances to or impossibilities of change in children.

Bettelheim's (1967) comment on the "treatability" of "autistic" children, in whom prognoses for change also have been considered very poor, is especially pertinent to conceptions of the role of etiological factors in causing and perpetuating mental retardation. He wrote:

> Wherever infantile autism is viewed as an inborn impairment, of whatever variety, the resultant attitudes toward treatment will be defeatist. Among those, on

> the other hand, who trace the causes of autism at least in part to the environmental influence, outlooks will be more optimistic because of the not always valid but convincing belief that what environment has caused, environment may also be able to correct. Nor is the pessimism limited to those who embrace the organic hypothesis. Study of the literature suggests it is also dominant among many who accept a psychogenic hypothesis, even in part. In my opinion the pessimism is unwarranted and may be ascribed to the fact that all too few efforts at treatment were intensive enough, and even more important were sustained for the requisite number of years (p. 405).

It is probably inevitable that researchers and clinicians will continue to speculate about the relationships between different etiologies and prognoses for change. To the extent that studies become more definitive and sensitive to multiple factors which may affect behaviors and performances of children, these evaluations may be accurate. To the extent that they ignore the multidimensionalities of learning and affective disorders, they will offer naive explanations of intellectual functioning and behavior, underestimate potentialities of children, and limit possibilities of introducing change into the lives of children. Increasing recognitions and references of numerous writers concerned with mental retardation and child development may be some indication that researchers are now rendering more cautious judgments and raising more relevant and appropriate questions about the impacts of different etiological factors.

Validity of specific criteria definitions of mental retardation. Beyond criticisms of ways in which criteria have been used to define conditions of mental retardation, there is a central issue of the validity of such an approach. If the assumption is made that "mentally retarded" children learn and behave in ways which are distinct from those of other learning disabled children and "normal" children, perhaps there is some justification for establishing separate criteria which differentiate them from the general population of all children. At present, however, in light of frequently noted overlappings and similarities of learning problems across many clinical groups and the fact that it has not been clearly demonstrated that the majority of problems of children termed "retarded" differ from those of other children, the validity of using specified criteria, which are confounded by difficulties of interpretation, seems questionable.

Clinical Evaluations of "Mentally Retarded" Children

The fields of both mental retardation and learning disabilities have been concerned with clinical evaluations of learning disordered children. Yet, their approaches to psychodiagnosis have differed markedly. These varying points of view are important in that they reflect different conceptions of the nature of learning disorders respective to the designated groups of children. Secondly, they reveal different conceptions of purposes and interpretations of clinical evaluations of children. Considerations of these differing positions may provide some insight toward understanding reasons why researchers and clinicians in the field of mental retardation, in contrast to that of learning disabilities, generally have not focused efforts on the development of clinical models of assessment or comprehensive diagnostic evaluations of children.

Learning disorders and mental retardation. The fields of both mental retardation and learning disabilities have been plagued with the task of attempting to understand learning disorders of heterogeneous groups of children. While researchers in both fields have recognized that learning difficulties may be characterized by a wide spectrum of disorders of listening, thinking, talking, reading, writing, spelling, and arithmetic, they have conceived of these disorders as having different cognitive and behavioral manifestations, which imply also to some writers differences in etiologies of impairment. Specifically, some writers in the field of learning disabilities (Johnson & Myklebust, 1967; Myklebust, 1954, 1968; Myklebust & Boshes, 1960) have postulated that children having specific learning disorders can be differentiated from other clinical groups on a basis of three criteria: (a) generalized sensory, intellectual, emotional, and motoric integrities; (b) a deficit in learning; and (c) a brain dysfunction. As in the field of mental retardation, points of view on criteria are far from unanimous and writers in this field have testified to the complexities of diagnosis of children suspected of having specific learning disabilities (deHirsch, Jansky, & Langford, 1966; Eisenberg, 1964; Kahn, 1969; Michal-Smith & Morgenstern, 1965). For example, they have emphasized that while children often are assumed to have minimal brain damage or neurologic dysfunctions, such evidence may be difficult or impossible to detect. Some writers have pointed out, too, that psychological factors, e.g., the impact of the family on the child (Kelman, 1964), should not be discounted in influencing behavior. Yet, in spite of these and other sources of divergent positions, an important assumption underlies most conceptions of children commonly described as "learning disabled," namely: although they are known to experience severe learning problems, these children are viewed as being able to learn (Zigmond, 1969). Moreover, their problems are conceived as existing in isolated or "specific" areas where cognitive functioning is revealed to be markedly below assessed levels of general intellectual functioning (Myklebust, 1968).

Conceptions of learning problems of "retarded" children considerably differ from these views. Some writers have sought to discover and attribute significance to variabilities of performances of "retarded" children (Jastak, 1949), and others have raised the issue that language disabilities may be primarily responsible for manifestations of mental retardation (Kirk, 1966, 1967).

However, as mentioned earlier in the section on the criterion of "subnormal general intellectual functioning," impairment is assumed to be pervasive. As a result, expectations of successful academic performance and anticipations for total life functioning, which do vary with designated etiological groups, generally are lowered. Furthermore, assumptions of pervasive impairment have discouraged development of diagnostic models and intensive evaluations of children. Evidence of "subnormal general intellectual functioning," thus is used as a scapegoat to account for all learning difficulties of children classified as "retarded."

Current applications of theories of intelligence (Guilford, 1967; Meyers & Dingman, 1966) and child development (Olver, 1966; Wohlwill, 1966; Woodward, 1963) to the study of cognitive abilities of retarded children hold much potential for broadening and changing these prior views. Hopefully, they will serve to emphasize that all such problems of learning are, after all, problems of child development (Conger, 1968).

Purposes of evaluations in mental retardation and learning disabilities. In light of different conceptions of learning disorders of children, researchers in the fields of mental retardation and learning disabilities have held contrasting views on the purposes of evaluations. Those advancing a learning disability approach (Bateman, 1965; Cruickshank et al., 1961; Frostig, 1967;

Johnson and Myklebust, 1967; Karnes, 1968; Kephart, 1960; Orton, 1937; Strauss & Lehtinen, 1947) usually have related psychodiagnostic evaluations of children to formulations of remediation strategies. These efforts appear to arise from the assumption that if areas of learning can be differentiated and appropriate remediation strategies devised and implemented, children will learn. Recently in the field of mental retardation, some writers have stressed the need for more comprehensive assessments (Robinson & Robinson, 1965; Sarason & Doris, 1969), others have described clinical methods of instruction for "retarded" children (Gallagher, 1960; Smith, 1968), and still others interested in child development have focused on language and conceptual development of "disadvantaged" preschool children (Bereiter & Englemann, 1966; Hunt, 1967; Kohlberg, 1968; Spicker, Hodges, & McCandless, 1966; Blank & Soloman, 1968; Weikart, 1967). These newer trends represent changing conceptions of educational practices which have implications for psychodiagnosis of learning problems of children. Certainly, they are a substantial departure from a more frequent emphasis on vocational training and social skills in special education programs which have relied, to a minimal extent, on comprehensive cognitive and behavioral assessments of children (Smith, 1968).

Such emphasis on social skills has raised a major question with regard to the education of "retarded" children, which has not been evident in the development of educational programs for children described as "learning disabled." Specifically, should the orientation of special education practices for "retarded" children fundamentally differ from that for other children (Guskin & Spicker, 1968)? If so, then what are the criteria of effectiveness, and how are these criteria to be measured? Quay (1963) has pointed out that these questions have posed serious difficulty for researchers and educators in the field of mental retardation who have been unable to agree on meaningful educational objectives. In the opinion of the writer, the controversy over concentration on academic versus social skills, which appears to be a meaningless argument, has partly contributed to the lack of development of comprehensive evaluative procedures. It is unfortunate that frequently objectives for special education programs have been so vaguely stated (Kirk & Johnson, 1951) that measurement of their effectiveness may amount to little more than checking retention of certain types of information which is considered requisite for "community living." More seriously, in focusing primarily on content, such approaches to evaluation and educational practice neglect one of the most central considerations in teaching all learning disabled children; i.e., processes of learning.

The contention here is not that research on mental retardation has neglected to study learning processes of children. To the contrary, there have been numerous investigations: (a) conceptualization (Inhelder, 1968; Milgram & Furth, 1963; Osborn, 1960; Stephens, 1964, 1966); (b) language (Bateman & Wetherell, 1965; Blessing, 1964; Hemenway, 1965; Speidel, 1965); (c) reading (Daly & Lee, 1960; Dunn, 1954; Miller, 1958; Ragland, 1964; Sheperd, 1965; Shotick, 1960); (d) memory (Belmont, 1966; Ellis & Anders, 1968; Spitz, 1966); (e) visual discrimination (Zeaman & House, 1963); (f) auditory discrimination (Schlanger, 1958). Moreover, many of these studies have employed evaluative instruments that are identical with or similar to those used by researchers in the field of learning disabilities. However, information from such studies generally has failed to reach applied levels in special education classes (Smith, 1968), has failed to serve in the development of diagnostic models of assessment of children, and, as mentioned earlier, only recently has been reflected to any degree in educational practices in research programs for very young children. Thus, even at a research level a distinction between approaches of the two fields still exists in the ways in which evaluative procedures have been applied and interpreted.

Bateman (1967) seems to advance a similar contention in her comment on the implications of the learning disability approach for teaching "retarded" children. She wrote:

> Recent surveys of research literature on how the mentally retarded learn reveal that our state of knowledge

> is really much more primitive than sheer numbers of studies could indicate. We know that retarded do learn, that much learning is related to MA and/or IQ, and that normals learn "better" than retardates do. However, direct evidence of how the classroom teacher of EMH can facilitate initial learning and retention is conspicuous by its absence.
>
> One contribution of the learning disabilities approach has been in the matter of question-asking. . . .
>
> These types of questions point directly toward a second possible contribution of the learning disability approach to teaching EMH children, i.e., a rejuvenation of interest in actual learning processes and factors which help or hinder classroom learning (pp. 23-24).

Conceived in a broad sense, psychodiagnostic approaches advanced by researchers in the field of learning disabilities appear to offer "immense advantages" (Murphy, 1969) over more limited conceptions of clinical evaluations proposed by researchers in the field of mental retardation. In essence, they raise "open-ended" questions, which have the potential of culminating in constructive courses of action.

The Relativity of Mental Retardation as a Function of Setting and Time

The apparent relativity of mental retardation in different settings and over extended periods of time has been another source of concern to many researchers. In part, the issue may be viewed as a problem of judgments and evaluations varying across different communities. Secondly, the issue is raised, often, by some clinicians and researchers where children show evidence of substantial, unanticipated change. In such situations children are frequently termed "pseudofeebleminded" (Benton, 1964; Cantor, 1955), and are differentiated from other children for whom prognoses for change are observed or considered to be extremely poor. Both of these aspects of the issue involve problems of diagnosis and community conceptions of mental retardation. Since these questions have been discussed already, they will not be considered here. Instead, major emphasis will be given to a third factor which seems to have etiological significance and implications for educational practices. This is the twofold observation by some researchers that: (a) prior to school entrance, certain children coming from "deprived backgrounds" are not recognized as functioning on retarded levels (Blatt & Garfunkel, 1965; Kirk, 1958), and (b) upon completion of their school years, many individuals formerly identified as "mentally retarded" may no longer be so classified (Clarke & Clarke, 1958).

As Sarason and Doris (1969) have recognized, this issue which has been little explored by researchers, undoubtedly, reflects an interaction of numerous factors. Among several possibilities, they discuss three: (a) variations in test items across different chronological ages which assess different abilities; (b) "discrepancies between home and school standards and expectations" (p. 77); e.g., failures in communication between children and their teachers;

and (c) adverse effects of interaction between home disorganization and school processes (p. 89). Each of these possibilities immediately involves one again in a maze of controversy over such questions as: the multi-dimensionalities of intellectual functioning, measurement of intellectual abilities, the complexities of etiological agents in detracting from intellectual potentials of children, the nature or characteristics of intellectual deficits (e.g., patterns of deficits), and the extent to which educational and therapeutic strategies can be used to intervene meaningfully and powerfully enough to effect substantial change in children.

Although these questions frequently have been raised with specific reference to "disadvantaged" or "culturally deprived" children, they represent universal concerns which are common to all endeavors to understand children where learning processes have been disturbed. In other words, there seems to be little reason to believe that certain variables or combinations of variables are necessarily exclusive to or universally identifiable with children living in socially and economically deprived areas. For instance, some writers have observed that "disadvantaged" children within the same families and communities are extremely heterogeneous (Blatt & Garfunkel, 1965). Moreover, "deprivation" may occur in a variety of settings.

With increasing awareness, it is probable that more definitive investigations of postulated relationships will yield important findings germane not only to conceptions of "cultural deprivation" and mental retardation, but more widely, to understandings of growth and development and learning disorders of all children. These findings should serve as an impetus to the development and implementation of more beneficial educational and therapeutic strategies. It is important, too, that in contrast to many former debates in the field of mental retardation issues, such as the relativity of mental retardation, and their related considerations are now being directed toward unraveling questions of "how" (Anastasi, 1968) certain factors interact, have influenced, and continue to bear on intellectual functioning and behavior of children.

Prognoses and Probabilities for Change of "Retarded" Children

From studies over the past 10 years, particularly involving children of preschool age, it is apparent that recent perspectives on possibilities of effecting change in children are being cast in more relevant and, by some researchers, optimistic terms. These conceptions reflect changes in the thinking of investigators in the field of mental retardation and a growing impact of related psychological disciplines pondering similar issues with respect to "normal" children. Some of the following influences appear to have had and continue to have substantial bearing on these conceptions.

First, as mentioned earlier, the fact that the present definition of mental retardation (Heber, 1961) describes "subnormal functioning" as current performance is significant, for such a conception does allow for the possibility of "change in status" of classification. In essence, the position introduces an important consideration of tentativeness into designations of mental retardation. Secondly, another major source of contribution has come from writings of several theorists on cognitive development (Bruner, 1963, 1964, 1966; Bruner, Olver, Greenfield et al., 1967; Elkind & Flavell, 1969; Furth, 1966, 1969; Hunt, 1961; Inhelder & Piaget, 1964; Piaget, 1968; Staats, 1968) and applications of some of these theories toward teaching children (Bruner, 1966; Gruen, 1968; Sigel, 1964, 1969; Sigel, Roeper, & Hooper, 1968). Researchers and theorists in child development have placed heavy emphasis on conceptions of structures and processes of learning--i.e., change in children. Thirdly, there have been many parallels between predominant speculations of researchers in mental retardation on the origins of learning difficulties of "cultural-familial retarded" children and mounting concerns of other investigators about potentially damaging effects of environmental influences associated with low socioeconomic class (Keach, Fulton, & Gardner, 1967) on cognitive development of children. Investigators of both areas of study have shared a common interest in prevention which has shifted the focus of much research to children, five years of age or younger. Underlying this focus are assumptions that educational and therapeutic strategies may have greater impact during early formative years of cognitive development.

From several points of view, researchers have raised and examined the question of prognoses and probabilities for change. They have been variously concerned with: (a) children differing in chronological age, presumed etiology, and educational and resident settings; (b) different areas of cognitive functioning and behavior; and (c) response to diverse teaching strategies and curricula over varying periods of time. For example, in a number of preschool studies, researchers have attempted to enhance levels of general intellectual functioning (Blatt & Garfunkel, 1965; Kirk, 1958; Skeels et al., 1938) and/or language development (Blank & Soloman, 1968; Spicker, Hodges, & McCandless, 1966; Weikart, 1967) by means of specifically designed educational interventions. With the exception of Blank and Soloman's tutorial language program, each of the interventions was extended for a period of at least two years. Other researchers have focused on short-term effects of experimental programs, more limited in scope, on specific areas of cognitive functioning such as language (Blessing, 1964; Smith, 1962); reading (Boyle, 1959); and productive thinking (Rouse, 1965; Tisdall, 1962). All of these studies included school-age children attending special classes. In 1965, Goldstein, Moss, and Jordan presented findings which concluded efforts of a four-year study, intended to demonstrate "the efficacy of special classes." At the beginning of the project, children were randomized into regular first-grade and special classes. Subsequently, those in special classes were given an educational program developed for teachers of "educable mentally retarded" children (Goldstein & Seigle, 1958). Periodically, all children were evaluated over the course of the project on several measures of intellectual and academic performance and personality factors. Finally, including 42 "brain-injured mentally retarded" children residing at a state institution in Dixon, Illinois, Gallagher (1960) conducted a four-year study in order to ascertain probabilities for change in response to diagnostically oriented teaching strategies. During the first three years of the study, children received different sequences of instruction in perceptual, language, memory, conceptual, and reasoning skills. Subsequently, during the fourth year following cessation of the tutoring program, they were re-evaluated (Gallagher, 1962). In general, the follow-up phase of the study revealed that gains acquired by children were sustained only to a limited extent.

In addition, other retrospective studies, reporting substantial changes in intellectual performance of children, have been conducted. Skodak and Skeels (1949) followed changes in intellectual performance of 100 adopted children over approximately a 12-year period, and also compared their mental development with characteristics of their "true" and foster parents. On the other hand, Wheeler (1942) did a study that involved evaluations of two groups of children residing in an East Tennessee Mountain area over the decade of 1930 to 1940. Wheeler concluded that vast changes in industrial and educational facilities in the community were largely responsible for changes in intellectual functioning of children.

Essentially, each of the aforementioned studies has attempted to determine the extent to which current and predicted "rates" and levels of cognitive functioning could be displaced by different environmental interventions. All of the studies reported evidence of changes in performances of children during courses of investigation. At the same time, however, certain studies also disclosed some qualifications in these findings. For example, some researchers discovered that changes in functioning: (a) were not generally sustained over prolonged periods of time (Blatt & Garfunkel, 1965; Gallagher, 1962); (b) differed in accordance with various settings; i.e., special versus regular class placement (Goldstein, Moss, & Jordan, 1965), institutions versus community settings (Kirk, 1958); and (c) varied in accordance with presumed etiology; i.e., "organic versus non-organic etiologies" (Kirk, 1958).

Thus, while such studies generally seem to indicate that prognoses for change in children are quite optimistic, they also highlight some crucial considerations. Among these, the first point has been stated elsewhere in the section on etiology. Since it is pertinent to interpretations of change in children, it is reviewed here.

(a) It is important to recognize that apparent differences between groups (e.g., various settings and etiological groups) reflect interactions of many factors. These variables may or may not be directly related to specified bases of distinction between groups.

(b) As Blatt and Garfunkel (1965) have revealed, demonstration of changes in children are dependent on many variables, not all of which are contingent on particular teaching methodologies and content of educational programs. Studies may be otherwise confounded by problems of timing and duration, sampling, and measurement (pp. 176-178).

(c) Learning involves wide dimensions of change in children. The extent to which different kinds of change can be effected probably varies a great deal. These variations may partly account for reported losses of initial enhancement of intellectual performances of children over time. Kohlberg (1968), supporting this contention, wrote:

> Our viewpoint suggests that the speeding up of cognitive-structural change is extremely difficult to achieve but is

> likely to have long range general effects, since invariant sequence implies that advance in one step of development may lead to advance in the next step. In contrast, specific learnings are more easily achieved but are unlikely to have long range developmental effects. As an example, it is relatively easy to teach culturally disadvantaged preschool children to discriminate and name animals, but it is difficult to "teach" them conservation. Naming and discriminating unfamiliar animals may lead to some temporary rise in the Stanford-Binet in terms of vocabulary and picture-discrimination items. It is unlikely, however, in itself to lead to any future cognitive development which might lead to higher "general intelligence" some years later. By grade school, the children will have "spontaneously" picked up the labels and discriminations involved in any case. In contrast, "teaching" the children conservation might lead to an accelerated general development of arithmetical and classificatory operations (p. 1034).

In contrast to general conceptions of changing intellectual and academic performance, Kohlberg's statement, like some other applications of theories and data on child development, provide and facilitate study of more incisive questions about relationships between cognitive and affective development in children and effects of specified programs.

Despite the fact that many research studies, intent on demonstrating changes in children, have been severely and justifiably criticized on a basis of methodological weaknesses, evidence supporting a contention that children do change seems to weigh heavily in a positive direction. Observations that certain children were not developing in accordance with designated expectancies or responding to educational and therapeutic programs in gainful ways have led to many former, and some present, conceptions that are unduly pessimistic. These conclusions are premature and misleading when viewed in general terms. Furthermore, they have underestimated complexities of mental development of "normal" children which seems to take an "automatic" course in spite of special interventions. Contributions from areas of study on child development and psychological functioning have been immensely helpful toward dispelling the cogency of such simplistic assumptions. In so doing, they have disclosed vast implications for the study and education of children experiencing learning disorders. These recent views do not imply, necessarily, that effecting change in children will become an easier task. However, they may clarify the nature and enormity of the task undertaken.

Conclusion

The foregoing section has included discussion of four major issues and related conceptions of mental retardation. These are by no means exhaustive in terms of controversies which have characterized this field of research. They merely represent the complexities of many such debates. Because this project, as a clinical study of learning processes and behavior of children placed in public school educable special classes, has been concerned inevitably with questions of terminology and criteria, evaluations of cognition and behavior, and the relativity and prognoses for change in individual children, these issues were selected.

Conceptions of Cognitive Functioning

In 1966, the American Association on Mental Deficiency published a monograph supplement entitled Cognitive Models and Development in Mental Retardation. The Monograph was a report on proceedings of a conference sponsored by The Woods Schools, the American Association on Mental Deficiency, and the National Institute of Child Health and Human Development. Discussion centered on considerations of the relevance of three major current theories of cognitive development and functioning to the field of mental retardation. These were: (a) factor analytic and "structure of intellect" models based on conceptions of J. P. Guilford; (b) the developmental psychology of Jean Piaget; and (c) conceptions of cognitive growth of Jerome Bruner. In addition to discussion of several "defect" theories (Zigler, 1966a) of which those of Ellis, Kounin, Lewin, Luria, Zeaman, and House are representative, these three contemporary conceptions of cognitive functioning will be reviewed in relation to conceptions of mental retardation.

Factor Analytic and "Structure of Intellect" Models

Meyers and Dingman (1960, 1965, 1966) and their colleagues (Meyers et al., 1961, 1962, 1964) have applied Guilford's (1959, 1967) factor analytic approach and "structure of intellect" model to the study of selected abilities of "mentally retarded" children.

In contrast to Spearman's (1927) conception of "general" and "specific" factors, the Guilford model, a multivariate view of the nature of intelligence, hypothesizes the existence of approximately 120 abilities in a young adult. Underlying assumptions of the model are: (a) that intelligence is best described in terms of multiple abilities; (b) that abilities are not identical and, thus, they constitute a basis for the development of "profiles" of intelligence; (c) that intellectual factors and profiles of abilities are stable; and (d) that various mental abilities differ in rates of growth. Essentially, the model is conceived as a comprehensive frame of reference for determining individual differences in intellectual functioning from performances on multiple measures of abilities.

Casting the model in terms of a "structure of abilities" of impaired and "normal" children, Meyers and Dingman (1966) made several other suppositions. These include:

(a) Some factors develop as a result of processes of education.

(b) Abilities develop from primitive structures.

(c) Abilities of older children reflect greater differentiations than those of younger children.

(d) When chronological age is held constant, abilities of "normal" children reveal greater structure than those of "retarded" children.

(e) Children having the benefit of "enriched acculturation" show greater differentiation of abilities than children who have not had such experiences.

(f) Domains of structure have a developmental order of sequence (p. 16).

Research conducted by these investigators, still in a formative stage, has been directed toward exploration of some of these assumptions in relation to children with mental age levels of six years or younger.

In one study involving "normal" and "retarded" children, Meyers, Orpet, Attwell, and Dingman (1962) attempted to reveal primary abilities at a mental age level of six years. A battery of 13 tests was administered to 100 children attending public school kindergarten and 100 children institutionalized at Pacific State Hospital. The major purpose was to differentiate four hypothesized factors; i.e., hand-eye psychomotor, perceptual speed, linguistic and spatial reasoning abilities. Findings of the study indicated that: (a) common factors of ability were distinguishable in children having mental ages of six years; (b) while abilities of "retarded" children appeared to be less differentiated than those of "normal" children, there were many similarities in the performances of the designated groups; (c) there was greater variability in performances of institutionalized children than in performances of "normal" children; (d) "retarded" children showed their highest levels of performance on linguistic tasks but had considerable difficulty on mnemonic and reasoning tasks; and (e) differences in performances of children etiologically classified as "undifferentiated-familial," "infectious-traumatic," "Mongoloid," and "miscellaneous" were almost negligible.

Meyers et al. (1964) conducted a similar study with children at three different mental age levels. Again, a fairly extensive battery of tests was administered to "normal" and "retarded" children having mental ages of two, four, and six years to distinguish hand-eye psychomotor, perceptual speed, linguistic, and figural reasoning abilities. The study revealed that: (a) abilities of young children, even at a mental age level of two years, can be differentiated; (b) older children did not display greater ability differentiation than younger children; (c) "normal" children did not display greater ability differentiation than "retarded" children of comparable mental age levels; and (d) with regard to the analysis of specific factors, perceptual speed and linguistic abilities were evident at mental ages of two, four, and six years; hand-eye psychomotor skills were clearly demonstrable only at mental age six; and figural-reasoning abilities were not distinguishable as separate factors at any of the three mental age levels.

In addition to the research of Meyers, Dingman, and their associates, other factor analytic studies of "ability structure" (Clausen, 1966; Taylor, 1964), which are not based on Guilford's "structure of intellect" model, have been made. Clausen's three-year project (1966) involved analyses of 50 variables including background factors, and sensory, motor, perceptual, and complex mental functions. As a comparative investigation of performances of three groups of "retarded" individuals ranging in chronological age from eight to 24 years and performances of "normal" children of eight to 10 years, the study had several objectives among which were the following:

> (a) To provide new understanding of the ability structure in the mentally retarded and to relate this structure to physical and intellectual development; i.e., to chronological and mental age.
>
> (b) To differentiate the mentally retarded into subgroups which are psychologically and behaviorally more homogeneous than those provided by current classification systems.
>
> (c) To relate configuration of abilities with extent of central nervous system damage as indicated by medical, neurological, and EEG examinations.
>
> (d) To relate factors underlying (subgroups) to etiology as is presumed from medical and family history (pp. 4-5).

Respective to these objectives, Clausen drew these conclusions:

(a) "Ability structures" of "retarded" individuals differed markedly from those of "normal" children.

(b) Among the three chronological age groups of "retarded" individuals there were similarities in level and pattern of sensory and complex mental functions, similarities in pattern but differences in level on motor tasks, similarities in level but differences in pattern on perceptual tasks. Moreover, in comparison with performances at earlier ages, intellectual functioning of individuals between 20 and 24 years of age appeared to slow down and regress.

(c) Results did not provide a basis for identifiable subgroups that were related to either etiology or medical and neurological information. Although "retarded" individuals were conceived as revealing less differentiation of "ability structure," Clausen also noted that they showed evidence of considerable variability which prevented homogeneous psychological and behavioral subgroupings.

Finally, on a basis of a variety of tests and rating scales, Taylor (1964) did a study involving subjects in their late teens and early twenties, with a mean IQ of 81. Analysis of 51 variables revealed 11 general factors such as "general dexterity," "verbal-numerical-educational," "mechanical assembly." Necessarily, these factors differ from those relevant to younger children.

Such factor analytic studies have a potential of providing comprehensive descriptions of intellectual performance. Thus, they may constitute a basis for clinical evaluations of children which are founded on a broad theory of the "nature" of intellectual abilities. At the same time, without additional sources of information and certain precautions in interpretation, the approach may have limitations. In particular, since factor analysis is a psychometrically oriented approach, it is important that investigators view intellectual abilities as changing processes, rather than discrete, "fixed" entities (Hunt, 1961). At present, factor analytic studies afford no means for gaining insight into processes of intellectual functioning. It is conceivable that a child's "method" of problem-solving is equally meaningful as or, perhaps, more informative than knowledge of the presence or absence of various abilities in diagnosing learning difficulties. Second, although factor analytic studies may disclose sequential orders of abilities, the approach appears to offer little possibility of exploring ways in which intellectual abilities develop or may be altered. The assumption that children who learn "normally" have a "universal profile" of abilities or a single developmental order of ability acquisition has been increasingly called into question by current theories of cognitive growth (Bruner, Olver, Greenfield et al., 1967). While studies of abilities of "normal" and "retarded" children do not explicitly adhere to a position of uniform development, simple comparisons of "ability structure" seem to allude to such a contention. Third, factor analytic studies have involved extensive evaluations to delineate multiple intellectual abilities. In addition to these comparative and descriptive studies of intellectual "structure," an important aspect of the development of this approach would include further investigations that would explore the potential bearing of various abilities and disabilities on cognitive development and learning processes at different stages of growth. Since evaluative instruments have been far from easily conceived and since factor analysis has been a complicated endeavor (Guilford, 1967), it is understandable that such studies have not been pursued. Yet, if researchers expect to extend factor analytic theory beyond a primarily descriptive approach, they must spell out these implications. For example, one issue for study might involve investigations of those abilities or "factors" that are critical to development of "conservation" in young children. Finally, factor analysis shares a major problem with other more "traditional" psychometric approaches; i.e., measurement of abilities which change in characteristic and complexity with increasing development.

These issues are not irresolvable. Moreover, viewed in relation to other current perspectives and theories on cognitive development, factor analysis may provide important sources for understanding learning and learning difficulties in children.

While factor analysis is not actually dissonant with the developmental psychology of Jean Piaget, the two theories represent substantially different approaches to the study of intellectual growth and functioning. Researchers interested in factor analysis have directed their efforts toward descriptions of components of mental processes termed "intelligence." Piaget's conceptions have had quite another focus.

The Developmental Psychology of Jean Piaget

Piagetian theory has been principally concerned with a discovery of "psychological structures" (Piaget, 1968) which govern development of thought processes from infancy through childhood and adolescence. In large part based on clinical observations of infants and children, Piaget's developmental psychology has involved a wide range of such studies as the child's language and thought (1955), conception of the world (1967), conception of physical causality (1965), judgment and reasoning (1966), conception of reality (1954), play, dreams, and imitation (1962); the origins of intelligence (1952); the growth of logic (Inhelder & Piaget, 1964); and the child's conception of space (Piaget & Inhelder, 1967). Prevalent throughout these writings are several conceptions which provide an underlying theme of continuity for the theory. Piaget maintains that:

(a) Cognitive development proceeds as a function of mutual interaction between the developing child and his physical and social environment.

(b) Throughout the course of cognitive development, the mutual interaction between the child and his environment takes form as a dialectical process of "equilibrium," where "psychological structures" change in response to environmental influences (i.e., "accommodation") and where the child modifies and reduces environmental stimuli in accordance with his cognitive "schemata" (i.e., "assimilation").

(c) Cognitive development involves adaptations which are successive, continuous, active, and goal-directed toward an increased organization of internal and external stages of reality.

(d) "Cognitive structures" have a fixed order of development.

(e) Development of all intellectual processes tend toward attainment of "logico-mathematical" operations; i.e., combinativity, reversibility, associativity, identity, and tautology (Piaget, 1968). At present, these conceptions are far from conclusively verified. As with other more specific aspects of the theory, they have generated both widespread interest and controversy.

This interest and controversy are evident in the writings of those who have sought to apply Piagetian theory to problems of mental retardation (Inhelder, 1968; Robinson & Robinson, 1965; Stephens, 1966; Wohlwill, 1966; Wolinsky, 1962; Woodward, 1963). Considered in terms of children who are experiencing learning difficulties, the theory raises a multitude of questions. Most of these issues are still at early stages of conceptualization (Wohlwill, 1966). However, one major question has received a good deal of attention; i.e., do learning difficulties classified as "mental retardation" represent a "developmental lag" where children still proceed through stages and sequences of development identical with those of "normal" children, or instead, are these learning disabilities manifestations of entirely different learning patterns? The issue is not unique to a Piagetian frame of reference in viewing problems of mental retardation. It has long been a concern of researchers who have observed that "retarded" and "normal" children, of supposedly comparable mental ages, vary in their performance and behavior (Zigler, 1966a). At first glance, such an observation appears to support a contention that learning and performance patterns of learning disabled children differ in essential ways from those of other children. Yet, some writers take another view. For example, applying Piaget's clinical techniques to the diagnosis and study of reasoning abilities of "retarded" children, Inhelder (1968) maintained the latter position. From numerous interviews with school-age children and adolescents, she concluded that:

(a) "Mental deficiency could be defined as an unfinished operatory construction" (p. 292).

(b) To a far greater extent than are apparent in "normal" children, thought processes of "retarded" children were characterized by "oscillations." Moreover, "retarded" children seemed to lack both a mobility and stability of thought processes.

(c) There was a "striking analogy" between reasoning of "retarded" children and that of "normal" children at prelogical, "egocentric" stages of development.

Despite these similarities in performance, Inhelder also recognized that such observations do not inevitably imply that all psychological processes of "retarded" and "normal" children of comparable mental ages are parallel. The point deserves emphasis in light of the fact that relevant considerations of individual differences may be excluded in favor of other research objectives; e.g., disclosure of general "structures" of cognitive development which is the principal focus of Piagetian theory. Such efforts, although comprehensive, may reveal only one facet of total mental functioning. Studies to supplement and clarify assumptions about cognitive growth advanced by Piaget (Endler, Boutler, & Osser, 1968; Sigel & Hooper, 1968) and to further understanding about such critical issues as the relationship between intellectual development and motivational factors or the role of learning processes in the development of "cognitive structures" (Hunt, 1961, 1968) are now being conducted. In addition, Inhelder's qualification of findings seems to argue against adherence to simple conceptions of mental retardation as either a condition of "developmental lag" or a manifestation of "unique" learning patterns. Probably, the wide gamut of learning disabilities experienced by children is characterized more accurately by inclusion of both views. For example, it is possible that initial problems of "developmental lag" may constitute a basis for later unique, extremely disordered behaviors. This position does not disallow the possibility of developing or re-establishing subsequent learning patterns that are more in accordance with positive, "normal" processes of adaptation.

As mentioned in earlier sections of this review, recent investigations on cognitive development have contributed much basic and applied research that is beginning to broaden ideas and raise discerning questions about the diagnosis, prevention, and remediation of learning problems of children. Piaget's work and studies, stimulated by his research and that of his colleagues, have had major influence on these recent developments. In relation to the study of learning difficulties in children, Piagetian theory might be expected to have particular relevance in the following respects:

(a) The theorist's developmental psychology presents a comprehensive view of cognitive functioning which refrains from defining intellectual processes in terms of measurement of performance on clinical tests. Piaget's concern with reoccurring changes in "cognitive structures" of children represents a radical departure from and extends far beyond most prior and contemporary conceptions of intelligence; e.g., "structure of intellect" and factor analytic conceptions, which tend to be static and more limited in scope.

As a result, the theory provides a fundamental and widely applicable frame of reference for evaluation of learning disturbances and development of appropriate teaching strategies.

(b) Piaget has sought to reveal "laws" and "rules" of cognitive growth underlying changes in mental functioning of the developing child. Rather than attending to more superficial objectives of measuring and teaching content materials, his theory attempts to interpret "why" children are able to comprehend increasingly complex forms of knowledge. In order to facilitate meaningful and enduring change in children, such insights are essential.

(c) Although not entirely consonant, recent contributions to psychoanalytic ego psychology (Erikson, 1959; Gill, 1967; Hartmann, 1939, 1964) and Piaget's developmental psychology share many parallel conceptions of behavior and development (Rapaport, 1960; Wolff, 1960). This correspondence of interpretation may be helpful toward encouraging more thorough descriptions of behavior of learning and emotionally disabled children along continuous dimensions of mental functioning which, often, have been considered and treated as separate domains.

(d) Bettelheim (1967) has perceived potential applications of Piaget's characterization of early stages of cognitive development to observations of behaviors of "autistic" children. He emphasized that in attempting to change severe disturbances of children, we are "dealing . . . with an inborn schedule that cannot be delayed too long" (p. 416). Bettelheim's comment is pertinent not only to disturbances of "autistic" children or affective domains of behavior. In other words, Piagetian theory may hold much promise for study of varying degrees of severity and effects of different periods of onset of disability and duration on cognitive development.

Conceptions of Cognitive Growth of Jerome Bruner

A comprehensive theory of cognitive development must account for diversities, as well as regularities, in human behavior. Similar to Piaget, Jerome Bruner has viewed the "course of cognitive growth" as proceeding through periods or stages that are characterized by the child's development of increasingly complex systems for organizing and processing information. At the same time, however, the conceptions of the two theorists differ considerably in their points of major emphasis. While Piaget has been concerned primarily with research on the development of "cognitive structures" that constitute the essence of intellectual growth, Bruner (1963, 1964, 1966) and his colleagues (Bruner, Olver, Greenfield, et al., 1967), in the main, have focused on such issues as the nature of "processes" of learning and cognitive development, individual differences in modes of thinking among children, and the role of cultural and environmental agents in fostering intellectual growth. Moreover, in contrast to Piaget, Bruner (1966) has specifically applied his conceptions of "enactive," "iconic," and "symbolic" forms of representation (i.e., representation through action, imagery, and language) toward theoretical formulations about and study of the teaching-learning process. In this respect, he has added a substantial contribution to current developmental research; for his conceptions have direct relevance for educational and therapeutic interventions.

It is not surprising that Bruner's theoretical formulations and research, sponsored by the Center for Cognitive Studies at Harvard University, were included for discussion during the research conference on Cognitive Models and Development in Mental Retardation (Garrison, 1966). On both basic and applied levels, Bruner and his colleagues have been attempting to come to grips with several issues that are of vital concern to researchers and educators engaged in working with learning disabled children. Among some of these issues are the following:

1. In what ways and to what extent do different cultures, providing different learning experiences for children, nurture variant patterns of cognitive growth? Studies conducted by Bruner and his colleagues (Bruner, Olver, Greenfield, et al., 1967) seem to indicate that learning behaviors among children across different cultures are diverse. To be more specific, these researchers focused their efforts on several comparative investigations of the

growth of equivalence and the establishment of conservation of quantity in thought processes of Wolof, Eskimo, rural Mexican, and American children. With regard to investigations of both "operations," they discovered that patterns of intellectual growth and performance appeared to be "culture-bound." Similarly, some researchers interested in cognitive development and functioning of "disadvantaged" or "culturally deprived" children have speculated about unique "patterning" of intellectual abilities (Sarason & Gladwin, 1958). Such hypotheses have centered on this question: How do certain constellations of variables bear adversely on cognitive growth of some children of families considered to be low socio-economically? For example, there is increasing recognition of a probable relationship between "social class" (i.e., multiple variables characterizing certain environments) and patterns of language functions (Ausubel, 1965; Bereiter & Englemann, 1966; Bernstein, 1962a, 1962b; Deutsch, 1965; Golden & Birns, 1968). At present, the specific nature of this interaction and the accompanying impact on other areas of intellectual functioning and development is not yet clear. Bruner's research on diverse patterns of development across cultures may contribute insight toward understanding some of these relationships among variables within cultures. In other words, through exploring the wide spectrum of variation characterizing a "normal" range of cognitive development, we may be able to discover those ways in which variation exceeds or departs from that spectrum and, thus, stifles and impairs intellectual functioning.

2. How can educators and clinicians provide learning experiences that are maximally beneficial in teaching children "to cope" with requirements of problem-solving (Bruner, 1966)? Although this issue is not new to psychological and educational study, Bruner's position on teaching children is singular. In a series of essays entitled Toward a Theory of Instruction (1966), the author outlined his approach which embraces conceptions of cognitive development, learning theory, and applied instructional practices. The theory of instruction includes four specifications: (a) establishment of a predisposition for learning; (b) attention to the structure and form of knowledge; (c) attention to effective sequences of materials; and (d) consideration of the form and pacing of reinforcement (pp. 40-53).

Also in this series of essays, Bruner recognized the need for development of instructional strategies for learning and emotionally disabled children. In addition to specific illustrations of teaching strategies with "normally functioning" children, he discussed his conceptions of instruction in relation to several children who, referred to the Judge Baker Guidance Center, were experiencing "learning blocks." Although Bruner's comments remain primarily at a descriptive level, his model does provide a theoretical structure for educational intervention that has been notably absent in research and practice with children considered to be "mentally retarded." Because intellectual and affective processes are still little understood, the application of the model to teaching individual children will be a difficult task. Yet, the theory is especially relevant in that it attends not only to the importance of form and sequence of knowledge but also to an equally critical aspect of learning; i.e., the "process" of instruction and interaction between teacher and child in the learning situation. If educators and clinicians are to experience any measure of success in promoting meaningful change in children, greater clarity on the roles of such factors in learning and intellectual development are crucial. Furthermore,

> What will be needed, in addition to adherence to technique, is much thought and activity devoted to developing a greater sense of the possible--in terms of technique, of what we think children can become, and of what children themselves think they can become (Murphy, 1969, pp. 265-266).

3. In what ways are information-processes of learning disordered children similar to and different from those of children who acquire and utilize knowledge commensurate with their chronological ages? Generally, research in the fields of special education has been devoted to ascertaining differences in performance among groups of children variously classified, with little attention

directed to study of similarities of functions. Moreover, evaluations of children have been based, to a large extent, on determinations of levels of achievement, rather than on assessment of processes of learning. These conceptions usually allow for little opportunity to explore such factors as underlying feelings, self-concepts, motivations, and strategies of processing information, which are integral to meaningful learning. Too, they limit ranges of expectancy for change in children and search for strengths in cognitive functioning and behavior. It was pointed out earlier in this review of research that such judgments have been apparent particularly in relation to children considered to be "mentally retarded," in whom intellectual "capacities" have been viewed as "pre-determined" and "fixed" (Hunt, 1961).

Bruner's conceptions of cognitive growth as "information processes" cast new light on these static and archaic assumptions. In contrast to closed-system philosophies, his emphasis on processes of learning implies that cognitive functioning and behavior are active, flexible, responsive, and constantly changing. His theory includes recognition of variation in performance. Yet, this premise of individual differences does not preclude possibilities for change. Furthermore, it is not dissonant with a notion supported by several researchers and clinicians in the field of learning disabilities who maintain that patterns of acquiring knowledge in learning disordered children are different (Zigmond, 1969) and that such children ought to be taught in accordance with their "styles of learning." To the contrary, Bruner contends that processes of learning can be shaped dramatically through "the process of education" (Bruner, 1963). This assumption is evident in his statement that ". . . any subject can be taught effectively in some intellectually honest form to any child at any stage of development"(p. 33). Such a statement reflects an attitude toward intellectual functioning, the permanence of learning disabilities, and prospects for nurturing growth far different from that of Zigler (Garrison, 1966), who made the following comment on Bruner's conceptions of cognitive growth in relation to "mentally retarded" children:

> It is my own bias that this kind of "what you can do with a child" has been oversold. I simply happen to believe in the notion of capacity, in species-specific characteristics, and I just don't believe that you move these kids in any meaningful manner up this helix very rapidly. Most of the efforts in my own research group to do this kind of thing have met with dismal failure (p. 120).

Summarizing, the issue of similarities and differences among learning processes of learning disordered children yet remains unresolved. Some researchers have tended to fixate on differences to a point where they isolate certain groups of children from the mainstream and observe no similarities in functioning. On the other hand, Piaget, representing another school of thought in attempting to discern regularities in cognitive development, has been severely criticized for not taking into greater account differences among children. Bruner's conceptions of cognitive growth seem to maintain a balance between these two positions. In terms of the study of and educational practices with learning disabled children, such a point of view is essential. Indeed, we cannot expect children who are experiencing severe learning and emotional difficulties to be able to function as productively as children who are able to acquire information commensurate with their chronological ages or to remain unchanged in response to these experiences. At the same time, we have to assume certain commonalities among functions, behavior, and basic needs. Such a position is couched in a belief that all children, in spite of their learning difficulties, are capable of reaching higher levels of functioning.

"Defect" Theories of Cognitive Functioning

Although widely variant regarding their individual assumptions, "defect" theories share a common premise that "mentally retarded" children are characterized by specific "defects." In general, these theorists take a position that "mentally retarded" children manifest inherent deficiencies in cognitive functioning and/or physiological anomalies and that these "defects" account for slowed rates or "incapacities" in learning and behavioral disturbances. As representative of this frequently supported position in the field of mental retardation, the following theorists will be discussed: (a) Ellis, (b) Kounin and Lewin, (c) Luria, and (d) Zeaman and House.

Ellis' Stimulus Trace Theory. In his Stimulus Trace Theory, Ellis (1963) postulated that all "mentally retarded" children have inherent deficiencies in short-term memory, which result in "behavioral inadequacies." These deficits are considered to be symptomatic of underlying central nervous system pathologies. Central to the theory are two hypothetical constructs: (a) the "stimulus trace," a neural response which is supposed to vary in duration and amplitude with "normal" and "retarded" children; and (b) "neural integrity," which is defined in terms of measured IQ. Ellis contended that nervous system pathology (i.e., lack of "neural integrity") restricts the amplitude and duration of the neural response (i.e., the "stimulus trace"). In turn, the "impoverished stimulus trace" results in poor short-term memory that is assumed to affect a wide variety of behaviors.

In support of his conceptions Ellis cited evidence from research comparing performance of "normal" and "retarded" groups on short-term memory tasks. This research included experimental studies on serial position effects, delayed reaction time, EEG findings, factor analysis of WISC data, and fixed-interval operant behavior. Moreover, Ellis concluded that further studies might reveal:

(a) a significant component of behavioral inadequacy that is associated with central nervous system pathology;

(b) those behaviors which are directly dependent on short-term memory;

(c) the effects of various physiological anomalies (e.g., central nervous system pathologies versus endocrine disorders) on behavior (pp. 154-155).

Despite evidence from several resources and the aforementioned points cited to justify the relevance of the Stimulus Trace Theory, some of Ellis' conceptions bear close scrutiny. In particular, these assumptions may be questioned:

(a) There seems to be little current evidence to support a contention that behavioral inadequacies or disturbances are solely contingent on central nervous system pathologies or that particular physiological anomalies effect characteristic behaviors.

(b) There seems to be little basis for maintaining that low IQ scores are valid indicators of lack of "neural integrity."

(c) We do not yet know whether and how neurological functions of learning disabled children differ from those of children who learn "normally." Many researchers in the field of mental retardation would disagree with this aspect of Ellis' Theory in relation to children considered to be "culturally deprived."

(d) Ellis gives little attention to a possibility that cognitive functions other than short-term memory may be bearing adversely on recall abilities.

(e) It seems suspect to assume that in those instances where children are experiencing a wide gamut of learning and emotional difficulties short-term memory deficits play a singular role in affecting behavior.

Finally, with regard to relevance of the theory, one further point might be kept in mind. Ellis himself cautioned against applications of findings to educational practices since implications of the theory and associated research have not been adequately investigated.

Kounin-Lewin conceptions of "rigidity" in "feebleminded" children. A considerable amount of research in the field of mental retardation has been devoted to study of the notion that behavior of "mentally retarded" individuals is "rigid" (Kounin, 1941a, 1941b; Lewin, 1936; Zigler, 1962; Zigler, 1966a, 1966b; Stevenson & Zigler, 1957). Two early proponents of this hypothesis, who have generated considerable controversy, were Kurt Lewin and Jacob Kounin.

Lewin's (1936) hypothesis that behavior of "feebleminded" children is "rigid" was derived largely from his more inclusive topographical field theory. Two major assumptions were basic to the general theory: (a) that "dynamic systems" among individuals vary; and (b) that these differences are attributable to the structure, material and state, and meaningful content of the total system. Applying these two conceptions to comparative studies of behavior of "normal" and "feebleminded" individuals, Lewin made several speculations. These were:

(a) Structures of "dynamic systems" of "feebleminded" persons are less differentiated than those of "normal" persons. This lack of differentiation in structure (i.e., fewer cognitive regions) in "feebleminded" individuals was conceived as one factor which might account for a predominance of "rigid" behaviors.

(b) Behaviors of older "feebleminded" persons are more "rigid" than those of younger "retarded" persons. This assumption was made on the basis of a conception that boundaries between regions of cognitive systems of older individuals are less permeable than those of younger persons.

(c) "Rigid" behavior of "feebleminded" persons might be a reflection of past experiences or contemporary situations. For example, behavior of individuals who had been confronted with constant and prolonged failure might tend to be more "rigid." According to this assumption, Lewin conceived that behavioral disturbances could be a function of environmental factors, as well as "innate" structural differences.

In support of these contentions, Lewin's data (1936) were based on several experiments involving "normal" and "retarded" subjects in various tasks intended to evaluate processes of satiation, abilities to resume interrupted activity, and abilities to substitute actions.

Like Lewin, Kounin was interested in studying the concept of "rigidity," developing methods of measuring properties of this behavioral manifestation, and ascertaining the validity of the concept in relation to age and "feeblemindedness" (1941a, p. 98). His theory also sought to answer a related question: Does the concept of "rigidity" allow one to state consequences to be obtained in defined conditions? In light of these objectives, Kounin postulated that "rigidity" is a "positive, monotonic function" of age and of the degree of "feeblemindedness." He conducted five experiments in order to explore these two hypotheses. The studies were based on performances of three groups of subjects; i.e., older "retarded" persons, "retarded" children, and "normal" children. They included experiments on satiation and cosatiation, transfer of habit, card sorting in simple and overlapping situations, integration by classification, and restructuring by classification. On the basis of findings of these experiments, Kounin reached the following conclusions:

> The general conclusion is to the effect that any performance which requires a certain degree of communica-

> tion between neighboring regions (the degree of communication being inversely proportional to the degree of rigidity) is to such an extent made difficult for the older and/or more feebleminded individual. As far as these experiments permit one to generalize, the phenomenological nature of the performance is unimportant (p. 116).

In response to the Kounin-Lewin conception of "rigidity," other researchers have advanced alternative hypotheses toward describing and interpreting behaviors of persons considered to be "mentally retarded." In particular, Zigler and his colleagues (Butterfield & Zigler, 1965; Stevenson & Zigler, 1957; Turnure & Zigler, 1964; Zigler, 1961, 1962, 1966a) have postulated that "rigidity behaviors" of "mentally retarded" persons are a function of many developmental and motivational factors, rather than a reflection of characteristically different cognitive structures. This hypothesis is consonant with an increasingly recurrent view in the literature on cognitive development and functioning of "normal" children (Bruner, 1966; Hunt, 1961; Sarason et al., 1960) and on "psychological problems" of exceptional children (Kessler, 1966; Sarason & Doris, 1969; Sarason & Gladwin, 1958); i.e., that learning is part of a totality of individual psychological functioning where both cognitive and affective domains influence observed behaviors and performance.

In an extended series of studies designed to examine the validity of the Kounin-Lewin conception, Zigler and his colleagues were directly concerned with this issue. They conducted several studies such as investigations of: (a) discrimination learning in "normal" and "retarded" persons (Stevenson & Zigler, 1957); (b) the "effects of success and failure on discrimination learning in normal and retarded children" (Butterfield & Zigler, 1965); (c) the impact of pre-experimental "negative reinforcing" conditions on performance of cosatiation tasks (Shallenberger & Zigler, 1961); and (d) relationships between "social deprivation" and "rigidity" in performances of institutionalized, "feebleminded" children (Zigler, 1961). Two major findings of these studies which conflicted with results of the Kounin and Lewin studies were that: (a) differences in performances among "normal" children and younger and older "retarded" persons were not always evident; and (b) performances of "retarded" persons, having the same mental ages, were not always consistent. On the basis of these findings, Zigler (1962, 1966a) arrived at several conclusions which differed substantially from the Kounin-Lewin position. Among these were the following points:

(a) To a large extent, "rigidity" studies have been based on investigations including individuals residing at institutions for the "mentally retarded." Generally, these kinds of settings have been characterized by minimal adult contact and interaction and lack of environmental stimulation (Blatt & Kaplan, 1966). Under such circumstances, observed "stereotypic" responses of individuals may be a reflection of increased motivation to secure adult contact and approval and not an inherent "rigidity" of cognitive structures and behavior.

(b) Earlier in this review, reference was made to observations of various researchers and clinicians that, frequently, children considered to be "mentally retarded" experience failure to an excess. These experiences may engender higher "negative reaction tendencies" and increased anxieties. Zigler contended that such responses may be operative during the course of child-experimenter interaction and, thus, may influence task performance.

(c) As a result of diverse environmental experiences, responses of "normal" and institutionalized, "retarded" children to various "reinforcers" may differ considerably. In other words, differences in performances of "normal" and "retarded" children may be attributable to motivational differences which have developed throughout courses of varying environmental histories and under widely disparate living conditions (e.g., total life existence in an institution versus community participation).

Few researchers in the field of mental retardation continue to adhere specifically to the Kounin-Lewin view of "rigidity" of cognitive structures. Yet, this approach still has its counterpart in some current conceptions of psychological functioning of and present clinical practices with children considered to be "retarded."

For example, until recently many clinicians, assuming "the mentally retarded" to be innately "rigid," have been reluctant to become engaged in psychotherapy with individuals so classified (Sarason & Gladwin, 1958). Zigler and his colleagues represent a marked departure from such conceptions in stressing the need for describing behaviors in terms of multiple determinants including such factors as psychodynamics, interpersonal dynamics, environmental influences, and immediate, experimental stimulus conditions. Moreover, these studies have focused attention on individual differences and introduced considerations of the relativity and contemporaneity of psychological functioning. These efforts are immensely helpful toward breaking clinical stereotypes of mental retardation advanced by such conceptions as the Kounin-Lewin approach.

Psychological studies of A. R. Luria. Psychological studies of A. R. Luria (1963) in the Soviet Union represent still another dimension of "defect" theory of mental retardation. Like other "defect" theorists, Luria conceives of "subnormal functioning" as symptomatic of underlying neurophysiological disturbances. Also, he maintains that "retarded" children reveal characteristic modes of dysfunctioning; i.e., "an inertness" and "a pathological dissociation" of motor and verbal systems. According to Luria, such pathologies result in severe impairments which are manifested in "incapacities" of the verbal signaling system "to regulate acts of behavior." Thus, the child has difficulty "fulfilling tasks in a conscious way" and is unable to accomplish tasks involving "any creative, intellectual activity."

While Luria does share assumptions similar to those of other "defect" theorists, his dynamic approach also differs from representatives of this school of thought. More specifically, in contrast to static conceptions such as the Kounin-Lewin formulation, he views initial dysfunctions in terms of their pervasive, continuing impact on subsequent stages of psychological development. Moreover, although he conceives of cognitive and behavioral dysfunctions as organic in origin, he has included several further qualifications that broaden the scope of his theoretical position. In particular,

(a) He has rejected the supposition that mental retardation is a "direct manifestation of innate dullness, or an inborn deficiency in abstract thinking." Instead, he contends that cognitive and behavioral disorders are disturbances that evolve throughout the course of mental development as a result of multiple neurophysiological, psychological, and environmental influences.

(b) He recognized that disturbances in certain functions, especially crucial to more complex mental development, may be more detrimental than others to general intellectual growth.

(c) He perceived that the age of onset of certain disorders may be a critical determinant of the degree of severity of disturbances.

(d) In spite of the fact that his theory does isolate specific deficiencies which are supposed to be largely associated with conditions of mental retardation, he places heavy emphasis on learning processes (1963, pp. 353-358).

In relation to other theories of mental retardation, it is likely that many researchers would disagree with Luria's conception that all conditions of mental retardation have constitutional etiologies. Probably, those interested in "cultural-familial mental retardation" would be inclined to take a view that Luria's data are based primarily on observations of more severely, organically impaired subjects (Zigler, 1966a) and would maintain that applicability of his findings is still open for investigation with regard to intellectual growth of children considered to be "culturally deprived." However, it is evident that there is a degree of correspondence between the two positions. Both Luria and several researchers conducting psychological and educational studies on cognitive functioning of "disadvantaged youth" (Ausubel, 1965; Bereiter & Englemann, 1966; Bernstein, 1962a, 1962b; Deutsch, 1965) postulate that verbal or language functions of "retarded" and "slow" children are impaired. Moreover, although they vary in their conceptions of the relative importance of constitutional and environmental factors, neither Luria nor most representatives of the environmental point of view disallows the possibility of interaction among such variables. Thus, it may be that Luria's efforts to observe stages of language dysfunctioning in relation to total mental development will contribute insight to our understanding of cognitive growth of language processes and clarify assumptions about supposedly dichotomous factors affecting learning disabilities.

Zeaman and House theory of attention in "retardate" visual discrimination learning. Zeaman, House, and their colleagues (House & Zeaman, 1960; Zeaman & House, 1963; Zeaman, Thaller, & House, 1964) postulate that attention deficits of moderately "retarded" children account for lowered performance on visual discrimination tasks. They contend that visual discrimination learning requires acquisition of a chain of two responses: (a) "attending to the relevant stimulus dimension," and (b) "approaching the correct cue of that dimension" (1963, p. 220). According to their attention theory, learning processes of "retarded" children break down in the first phase of acquisition; once learning commences, differences in rates of acquisition decrease. Specific to their studies, Zeaman and House make the assumption that children with low mental ages (i.e., two to six years) have low probabilities of observing, initially, dimensions such as form, color, position, brightness, and size. Unlike the aforementioned "defect" theorists, the authors do not specify that such attention deficits are directly related to underlying physiological anomalies. However, the fact that their studies have focused on discovering distinct differences between performances of "normal" and "retarded" children of the same mental ages does qualify their position as a "defect" theory. Indeed, they make their position explicit in the following statement: "A major goal in the development of this attention model is to provide a framework for analysis of apparent learning deficits in retardates" (1963, p. 217).

In their discussion of the "role of attention in retardate discrimination learning," Zeaman and House (1963) have placed considerable emphasis on theoretical conceptions underlying their experimental studies. They appear to be equally concerned about relating implications of their data to educational practices with children. In this respect, they stand in contrast to many "defect" theorists who have concentrated their efforts primarily on identification of deficits and advanced few speculations about application of theoretical conceptions. To a large extent, lack of attention to educational practices seems to reflect that many such studies are yet at formative stages of conceptualization. Secondly, it may be an indication that, generally, assumptions of innate deficits do not lend readily to conceptions of change; i.e., prevention or remediation. The psychological studies of Luria and the attention theory of Zeaman and House have suggested that manipulation of certain variables has been effective in changing patterns of "inattention"; e.g., stimulus factors such as novelty and oddity; transfer operations such as reversals, intradimensional and extradimensional shifts, and object-to-pattern transfers; and reward. In light of frequent references of researchers to attention, discrimination, and perceptual disturbances (Cruickshank et al., 1961; Eisenberg, 1964; Strauss & Kephart, 1955; Strauss & Lehtinen, 1947) and disorders of information processing (Myklebust, 1968; Sabatino, 1968; Sabatino & Hayden, 1970; Zigmond, 1969) of learning disabled children, these strategies may be quite relevant. Furthermore, some of the recommendations (e.g., object-to-pattern transfer) do not appear to be far removed from educational strategies often cited in relation to remediation of learning disorders which move from more concrete to abstract concepts (e.g., a progression from toys to pictures to verbal concepts).

On the other hand, the theory does have some limitations. In part, these are related to theoretical issues. Others are germane to the applicability of educational strategies to learning difficulties. For example,

(a) The fact that attention, discrimination, and perceptual disturbances have been mentioned frequently with regard to children experiencing a wide range of learning disorders raises, again, the issue of whether such deficits are exclusive to children considered to be "mentally retarded."

(b) The authors, themselves, have pointed out that their theory and studies do not come to grips with the question of generalization to other kinds of discriminations. Thus, we need further observation of such factors as learning processes of children involving channels other than visual modalities and acquisition of knowledge on more complex levels (e.g., written letters and words).

(c) In accordance with his "motivational theory" of cognitive functioning and behavior, Zigler (1966a) has raised a third important consideration. He has suggested that:

> . . . differences found by Zeaman and House between normals and retardates of the same MA may be due to some combinations of general motivational or situational variables rather than to some central deficit in the retarded (p. 145).

Despite the fact that recent, alternative conceptions of learning disabilities in children are now being advanced, "defect" theories have been and continue to be a pervasive school of thought in relation to children who are classified as "mentally retarded." Two predominant conceptions, either explicit or implicit in many of the theories, have had a substantial impact on the direction of research in the field of mental retardation and on attitudes toward children so classified. These are: (a) assumptions of innate differences in learning, and (b) notions of constitutional anomalies. Moreover, many clinicians and researchers have been inclined to believe that disorders of psychogenic origin are more liable to change than disturbances having neurophysiological concomitants (Bettelheim, 1967). Thus, invariably, assumptions of "incurability" have been associated with "retarded" children. Basing their arguments on the frequently cited lack of evidence of neurological involvement, some researchers take issue with this position and contend that such assumptions are not appropriately conceived with regard to "cultural-familial retarded" children. In essence, they appear to be dissociating conceptions of "defect" theory from conceptions of "cultural-familial" retardation. In view of certain connotations of "defect" theories, these attempts are understandable. Yet, assumptions of distinctive patterns of cognitive functioning and neurophysiological involvement need not have such negative connotations. In the field of learning disabilities, both of the aforementioned conceptions have been considered in relation to learning disordered children and have not precluded anticipations of clinicians and researchers that children will learn. The intent here is not to argue the evidence supporting or rejecting these assumptions. With increasing studies on neurochemistry of learning, hopefully, such controversies will be clarified (Kessler, 1970). However, with respect to many "defect" theories the major point is this: that considered in particular relation to "mentally retarded" children this school of thought has often tended to characterize children in ways that have been simplistic, unproductive, and severely detrimental to advances in educational and therapeutic practices with children.

Summary and Conclusions

This section of the review of the literature has included discussion of four major schools of thought on cognitive functioning of "mentally retarded" children. These were: (a) factor analytic and "structure of intellect" models; (b) the developmental psychology of Jean Piaget; (c) conceptions of cognitive growth of Jerome Bruner; and (d) "defect" theories of cognitive functioning. In large part, they were selected for the review because they represented diverse, prominent points of view on issues that are crucial to evaluation and education of children considered to be "retarded." Specifically, each of the aforementioned conceptions has centered on one or more of the following purposes: (a) to describe characteristics of cognitive functioning and/or intellectual growth in "normal" and "retarded" children; (b) to interpret underlying etiological sources which were suspected to account for variation in performance and development of children; and (c) to relate theoretical assumptions of learning disabilities to educational and therapeutic strategies. Since the present study is directly concerned with observations and descriptions of social-emotional behavior and patterns of cognitive performance which appear to have bearing on intellectual dysfunctioning and with a development of remediation strategies for learning disabled children in public school educable special classes, these conceptions were considered to be of particular relevance. Moreover, they have contributed, in a substantial way, to a formulation of the writer's philosophy of and approach to diagnosis and remediation of learning disabilities of children.

Mental Retardation and Learning Disabilities

Innumerable studies have been devoted to research on learning disabilities of "mentally retarded" children. These studies have included investigations of performance related to: (a) selected aspects of cognitive functioning; e.g., conceptualization, language, and visuo-motor functions; (b) characteristics of learning; e.g., transfer, association, and rate of learning; and (c) levels of achievement on "academic" tasks; e.g., reading. A primary intent underlying a majority of these studies is a determination of intellectual dysfunctions which are hypothesized to be distinctive to performance and learning of children classified as "mentally retarded." To a large extent, these attempts have revealed somewhat conflicting results. In addition to methodological problems, such findings emphasize at least three issues which are central to consideration of investigations to be reviewed in the following section and to the present study.

1. While many studies have focused on selected deficits, it is well to recognize that the impact of such disorders on cognition, learning, and social-emotional behavior is probably multidimensional and may be unique to individual children. This point is not intended to deny the importance of attempting to study regularities in psychological behavior. However, it does highlight the possibility that certain dysfunctions are not as clearly defined as some studies appear to indicate. Also, it is quite likely that, rather than singular attributes, combinations of "disabilities" account for disorders in learning.

2. The second point has already been raised in the preceding section of this review and is pertinent, also, to the final part of the chapter on Mental Retardation and Performance and Behavior Variance. Since it is relevant to discussion of studies intended to discern characteristic learning disabilities of "retarded" children, it is included here. The issue is this: Variables, other than apparent deficits in cognition and processes of learning, may effect lowered performance on academic tasks. Perhaps to a fault, this study has stressed the importance of recognizing the relationship between cognitive and affective domains of psychological behavior. Yet, in view of the fact that most studies on cogni-

tive functioning, learning, and academic performance in the field of mental retardation fail to consider this possibility in their interpretations of learning difficulties, it seems to warrant special emphasis.

Sarason (1959) has made a similar point in the following comment:

> The child who has experienced failure and ridicule in classroom recitation, who views himself as inadequate and inferior, whose verbal responses to questions have been associated with anticipations of disapproval or punishment--such a child will probably react with heightened apprehension and anticipations of failure if he is immediately presented with test items which demand an oral response to a verbally presented problem. To such a child the test situation is similar to the face-to-face interview kind of situation in which he had learned to feel inadequate. His failure with such test items is not fully explained by a word like "inability" or a phrase like "lack of capacity." The nature of the stimulus task, the demands it makes on the child, and his previous experiences in similar situations are all factors that must be taken into account if one is interested in more than merely noting an item was passed or failed (pp. 72-73).

3. Finally, specific cognitive functions and learning characteristics which are hypothesized to be related to lowered performance on academic tasks and slowed intellectual development need to be more clearly defined. At present, our state of knowledge of such terms as "perception," "learning" (Doehring & Rabinovitch, 1969), "conceptualization," and "language" are inexact. As a result, it appears that learning disabilities of children, often, are designated without a precise understanding of their meaning. This lack

of clarity adds further ambiguity to an already difficult task of diagnosing and making recommendations for remediation of learning disorders in children. To be sure, the problem is not unique to the field of mental retardation. However, it is worth bearing in mind where researchers are using certain terminologies to describe learning patterns and intellectual development of children.

In light of these considerations, selected studies on disorders in cognitive functioning, disorders in learning processes, and performance on related academic tasks of "retarded" children will be reviewed.

Disorders in Cognitive Functioning

The present study has viewed cognition as involving six related psychological processes; i.e., conceptual, language, mnemonic, visuo-motor, visual, and auditory functions. In accordance with this conception, disorders of "retarded" children relating to each of these intellectual functions will be discussed.

Conceptual functions. Traditionally, "mentally retarded" children have been regarded as deficient in their performance on conceptual or problem-solving tasks. Studies have examined this contention in relation to such behavioral manifestations as: (a) "inabilities to abstract" on various sorting (Capobianco, 1962; Halpin, 1958; Iscoe & Giller, 1959; Stacey & Portney, 1951) and verbal (Griffith & Spitz, 1958; Osborn, 1960; Weatherwax & Benoit,

1957) tasks; (b) difficulties in categorizing and classifying (Stephens, 1964, 1966, 1968); (c) similarities in reasoning abilities of "mentally retarded" children and young, "normal" children at prelogical stages of development (Inhelder, 1944, 1968; Stephens, 1966); and (d) performance on selected test items; e.g., reasoning by analogies, word-grouping, and figure-grouping tasks on the SRA Primary Mental Abilities Test (Johnson & Blake, 1960).

While it may seem reasonable to assume that intelligence and concept attainment are highly correlated (Sigel, 1964) and that mental retardation, inevitably, results in such behavioral manifestations, findings of the aforementioned studies and other investigations are not wholly congruent with this general view. More specifically, while results of some studies have indicated that many children classified as "mentally retarded" do have difficulty in accomplishing tasks which involve conceptual functions, they also have revealed that such conclusions need to be further qualified. They have pointed out that:

1. Conceptualization includes performance across a wide range of intellectual tasks which vary considerably in complexity and in the nature of the psychological requirements posed to individuals. Consequently, it is not surprising that studies have discovered that performance of "mentally retarded" children on different conceptual tasks are not always consistent. For example, find-

ings of several investigations (Furth, 1966; Furth & Milgram, 1965; Milgram & Furth, 1963; Stephens, 1968; Witkin et al., 1966) have indicated that "mentally retarded" children have particular difficulty with conceptual tasks on a verbal level. Since children thus identified have also been characterized as experiencing language disabilities, some researchers have raised a question of the extent to which such disturbances influence and compound problems of concept attainment (Furth, 1966; Furth & Milgram, 1965; Milgram & Furth, 1963). This position is in agreement with that of Stephens (1968), who has advanced the hypothesis that children may be able "to employ conceptual categories in problem-solving situations without being able to provide a conventional verbal label which accurately describes the categories which have been successfully used" (p. 277). Moreover, these conceptions are in accord with underlying assumptions of other studies (Griffith, 1960; Milgram & Furth, 1967) that have sought to explore the extent to which verbal mediators or verbal monitoring facilitates concept attainment.

On the basis of these studies one might speculate that, rather than gross impairment, disabilities of children are more likely to be characterized by disturbances relative to certain "conceptual classes" (Furth & Milgram, 1965). Such a conclusion still leaves the researcher with a major problem of determining where, along sequences of steps toward task accomplishment, intellectual processes of different children are failing. At present, the writer has found little evidence of such investigations.

2. The validity of maintaining that "mentally retarded" children are "incapable" of abstract thinking on conceptual tasks is highly questionable. Evidence from some of the aforementioned studies (Capobianco, 1962; Furth, 1963; Furth & Milgram, 1965; Griffith & Spitz, 1958; Stephens, 1968) and other investigations (Rouse, 1965; Tisdall, 1962) that have found children able to accomplish tasks involving conceptual functions does not support this contention. Furthermore, in light of current conceptions of cognitive development as a dialectical process which is manifested in continuous stages of "progressive" and "regressive" adaptive behavior, assumptions of "dichotomous categories of thinking" (Weatherwax & Benoit, 1962) seem simplistic.

3. Inconsistent performance of individual children on certain problem-solving tasks may reflect a lack of stability of conceptual functions. In The Diagnosis of Reasoning in the Mentally Retarded, Inhelder (1968) reported that thought processes of some children were characterized by "oscillations" and a "fragility of intellectual operations" which interfered with reasoning on conceptual tasks. In general, such "oscillations" revealed a "disequilibrium" between "a real capacity to execute the operations and the apparent

result of reasoning" (p. 265). She further distinguished between "progressive reasoning," where consolidation of thought processes, temporarily arrested, is still in formation, and "regressive reasoning," which is manifested in a marked decline in levels of reasoning during the problem-solving task. Thus, in spite of the fact that Inhelder does generally characterize conceptual behavior of "retarded" children as being analogous to the "egocentric mentality" of young children, she does specify that such parallels do not imply that characteristics of all psychological behavior of "retarded" and young, "normal" children are necessarily similar. Also, she does provide comprehensive descriptions of intellectual functioning in process on selected tasks, which are unique to research on mental retardation.

4. Finally, while findings of studies have not been applied extensively toward understanding intellectual processes of "mentally retarded" children, research in child development on "cognitive style" (Sigel, Jarmen, & Hanesian, 1967) and some investigations of "cognitive controls" of exceptional children (Santostefano, 1964, 1969) reveal another possibility for evaluating conceptual disabilities, examining sources of variation in performance, and departing from homogeneous characterizations of children. In particular, Santostefano (1969) has attempted to identify four "cognitive controls" in terms of which cognitive disabilities of children

might be evaluated. These "controls" are defined as mechanisms or principles which:

> (1) govern and determine the amount and organization of information which become available to an individual perceiver; (2) are activated by specified classes of stimuli which cause the individual to experience some intention to use and adapt to the information; (3) vary in the extent to which they operate in the cognitive functioning of the individuals; (4) evolve, in part, as a function of maturation and life experiences and become independent (autonomous) from their origin of development; (5) mediate the influence of personality and motivation in the individual's cognitive encounters with the environment; (6) become enduring aspects of an individual's cognitive functioning and adaptive style and, thus, give shape to his subsequent cognitive experiences (pp. 295-296).

From the above statement, it should be evident that the model offers possibilities for investigating multiple factors which may bear on conceptual disabilities. Some assumptions underlying the schema parallel several current conceptions of cognitive development of children and psychoanalytic ego psychology; the model relates both cognitive and affective functions to interpretations of intellectual performance. In addition, it takes into consideration other crucial factors such as life experiences. Furthermore, the schema departs from traditional notions of inherent, unchanging deficits; for it is based on a central assumption that rehabilitation of "deviant cognitive controls" will enhance intellectual performance of children. Although these conceptions are yet at a preliminary stage of development, early findings have indicated some support for the validity (Santostefano, 1969).

Perhaps the aforementioned qualifications will be helpful toward dispelling general notions that conceptual behaviors of "mentally retarded" children are innately "rigid" and "concrete." Too, further investigations may begin to clarify our understanding of cognitive and affective factors that contribute toward immobilizing conceptual thought processes. For example, Furth (1966) has pointed out that characterizations of "rigidity" and "concreteness," also used to describe performances of deaf children, may be more revealing of "typical" environmental experiences than symptomatic of innate conceptual disabilities. Likewise, conceptual difficulties of "retarded" children may reflect, in part, the influence of such factors. On a basis of observations of and available literature on instructional practices, it does appear that much special education for children classified as "retarded" is not especially conducive to a development of logical thought processes.

Language functioning. Although it has been a common finding among many researchers that "mentally retarded" children have language disabilities, the particular nature of such disabilities, their impact on other cognitive functions, and etiological factors yet remain unclear. To a large extent, these issues appear to stem from the fact that, like disorders of conceptualization, language disabilities may reflect a wide variety of dysfunctions in learning processes. As a result, numerous studies relating to language disorders of "mentally retarded" children have been extremely diverse. They have differed in terms of underlying theory, the focus or selected dimension of language learning or performance investigated, and methodologies and procedures employed.

In particular, studies have centered on the following points of interest. They are:

(a) incidence of speech and language problems of children in various populations (Jordan, 1967; Matthews, 1957; Spradlin, 1963);

(b) general levels of language achievement (Durrell & Sullivan, 1958; Hemenway, 1965; Speidel, 1958);

(c) language dysfunctions as characteristic deficits of "mentally retarded" children (Dingman & Meyers, 1966; Meyers & Dingman, 1965, 1966; Furth, 1966; Furth & Milgram, 1965);

(d) specific aspects of language functioning such as receptive, expressive, and association abilities (Bateman, 1965; Bateman & Wetherell, 1965; Blessing, 1964; Kirk, 1967; Kirk & McCarthy, 1961; McCarthy, 1964; McCarthy & Kirk, 1961; Ragland, 1964; Sheperd, 1965);

(3) the relationship between language and thought where language is viewed either as a principal determinant of cognitive development and functioning (Furth, 1966; Furth & Milgram, 1965; Spreen, 1965) or conversely, as one aspect of a wider dimension of psychological behavior (Jordan, 1967) that is affected by dysfunctions in underlying learning processes; e.g., mediational deficien-

cies between verbal and non-verbal systems (Luria, 1961, 1963);

(f) the effects of "cultural deprivation" on learning patterns of children, in particular on language development (Ausubel, 1965; Bereiter & Englemann, 1966; Bernstein, 1962a, 1962b; Blank & Solomon, 1968; Deutsch, 1965).

Discussion will be limited to consideration of these three issues: (a) language dysfunctions as characteristic deficits of "retarded" children; (b) specific aspects of language dysfunctioning; and (c) the relationship between language and thought which may underlie learning disorders in children. The remaining issues will not be directly considered for the following reasons. The effects of "cultural deprivation" on language development have already been discussed briefly in the section on Conceptions of Cognitive Functioning. As a result of sampling problems, studies on the incidences of speech and language difficulties of "retarded" children have revealed conflicting results (Matthews, 1957) to an extent that they contribute little insight beyond a recognition that children do experience such disorders. Studies on general levels of language achievement will be discussed in the third part of the present section on Mental Retardation and Learning Disabilities. It should be kept in mind that although the following issues will be considered separately, they are not distinct. Also, studies bearing on particular points of interest may relate to other issues.

Over the past 10 years, increasing numbers of studies have postulated that "mentally retarded" children are characterized by language deficits. Evidence from a variety of studies may be cited to support such a contention. For example, although statistics are not in agreement, many studies have revealed high incidences of delayed and defective speech among children considered to be "mentally retarded" (Matthews, 1957). Findings of some studies (Furth, 1966; Furth & Milgram, 1965; Milgram & Furth, 1963) seem to indicate that "retarded" children function less well on "verbal" than on "non-verbal" problem-solving tasks. A study by Stephens (1968), cited earlier, disclosed that children were able to accomplish problem-solving tasks without necessarily being able to provide "conventional verbal labels." Kirk (1967) emphasized the potential importance of language disorders when he advanced the hypothesis that specific psycholinguistic disabilities, rather than generalized mental dysfunctioning, may be primarily responsible for lowered intellectual performance of many children. Similarly, Inhelder (1968), recognizing the interdependence of language and conceptual functions (i.e., symbolic imagery and operativity) stressed the need for close scrutiny where difficulties in symbolic expression may underlie learning problems. Inhelder holds to a clear distinction between "mentally deficient" children who have a "limited potential," and "normal" children who are experiencing language difficulties. Yet, the noted frequency of her observations that a considerable number of "pseudoretarded" children do have language difficulties again may point to a prominent role of language disabilities in contributing to intellectual dysfunctions. There are other studies. Among several hypotheses tested in a series of studies at Pacific State Hospital in California, Meyers and Dingman (Dingman & Meyers, 1966; Meyers & Dingman, 1965, 1966) postulated that "symbolic" abilities of "retarded" children are less differentiated than those of "normal" children. At present, however, findings of these studies have not clearly demonstrated such distinctions. Finally, two other sources of research are supportive to the view that language disorders are characteristic disabilities of "retarded" children: (a) studies on "cultural deprivation" which maintain that "disadvantaged" children reveal "selective retardation" in language functions as a consequence of "restricted environments" (Ausubel, 1965); and (b) investigations postulating deficiencies in mediational-symbolic processes (Luria, 1961, 1963).

After all, the evidence does appear to lead to a conclusion that "retarded" children are language disabled. On the surface, such observations probably are quite accurate. However, they reflect consideration of only a limited aspect of an extremely complex cognitive function. Contributions from the fields of learning disabilities and neurology have indicated clearly that language disabilities are symptomatic of a wide gamut of more central "psychoneurological" dysfunctions, any one or combination of which may be responsible for impaired development in verbal processes of children. In a sense, studies bearing on the next two issues reflect attempts of some researchers to delineate specific and underlying aspects of observed language dysfunctions.

Recent literature on the psycholinguistic disabilities of children exemplifies one approach to the evaluation of particular aspects of language disorders. Specifically, the Illinois Test of Psycholinguistic Abilities,[1] one of the more recent test developments, was conceived for the purpose of assessing various dimensions of language functioning; i.e., receptive, expressive, and association abilities in auditory, visual, and motor functions on representational and automatic-sequential levels (Kirk & McCarthy, 1961). Several investigators (Bateman, 1965; Bateman & Wetherell, 1965; Blessing, 1964; Goldstein, Moss, & Jordan, 1965; Kirk, 1967; Ragland, 1964; Sheperd, 1965) have used the test in evaluations of children considered to be "retarded." Among these studies there appears to be substantial agreement that children so classified function less well on subtests at an automatic-sequential level, which are assumed to tap "non-meaningful uses of symbols, principally their long-term retention and the short-term memory of symbol sequences" (McCarthy & Kirk, 1961, p. 6). With regard to such interpretations, one question, which really applies to all evaluative instruments, may be raised: Do the subtests measure designated processes to an accurate and specific degree that allows for intensive descriptions of language dysfunctions? In response to this question, it does seem that these subtests are widely inclusive in terms of response requirements for accomplishment of selected tasks. Moreover, on the basis of such general interpretations that children manifest lower performances on subtests of automatic-sequential levels, it is extremely difficult to draw any insightful conclusions about disorders in implicit processes of learning. Thus in the least, such instruments, alone, are insufficient to describe specific aspects of language disabilities of children.

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[1] A revision of the experimental version of the Illinois Test of Psycholinguistic Abilities was published in 1967. At the commencement of the present study, this version was not available.

The third issue, the relationship between language and thought, presents still another complex and controversial approach toward explaining observations of language disorders in children. On the one side, there is a substantial body of research, cited in the preceding section on conceptual disorders, which maintains that specific language deficits influence other cognitive functions and development. In essence, this point of view posits the assumption that language deficits, per se, have a controlling effect on total intellectual development. Such a view is somewhat dissonant with Piaget's and Inhelder's position which is based on a premise that "intellectual operations" direct language acquisitions. On the other hand, other researchers (Luria, 1961, 1963) have interpreted verbal disorders in a different light. They have suggested that language is one of several aspects of behavior that may be affected by underlying disorders in learning processes where children are failing to meet important educational and developmental norms (Jordan, 1967). Such an assumption seems implicit in Luria's contention that a dissociation between motor and verbal signaling systems of some children hinders regulations of behavior. Responding to these differences in interpretation, Spreen (1965) has raised a question of whether "mentally retarded" children suffer from a specific mediational deficiency or from a deficit in language functions. Research on this issue is far from clear. Moreover, the question itself tends to be somewhat confusing because mediational deficiencies, in fact, may lead to language disabilities. For these reasons, it appears that before any conclusive statements can be made about language disorders of specified children, we need more definitive knowledge about such problems as the regulatory effects of language on learning and intellectual development, "the changing relations between verbal and non-verbal processes as language mastery increases" (Ervin & Miller, 1963), and influences of information processing, transfer, retrieval, and storage (Millikan & Darley, 1967) on language functions of children who are and are not experiencing learning difficulties.

Mnemonic functions. Considerable research in the field of mental retardation has been predicated on an assumption that "retarded" children suffer from memory losses. At best, data and interpretations relating to short- and long-term memory deficits are equivocal. Positions have ranged from assumptions that "retarded" children reveal characteristic memory deficits as a result of neurophysiological anomalies (Ellis, 1963) to views that lowered performance on immediate recall and retention tasks reflect, instead, a primary influence of intervening variables; e.g., deficits in "input organization" or associative clustering (Gerjuoy & Spitz, 1966; Gerjuoy et al., 1969; Spitz, 1966) or retroactive and proactive inhibition (Johnson & Blake, 1960). Moreover, in reviewing the vast numbers of studies on learning and memory in "retarded" children, several writers (Belmont, 1966; Goulet, 1968; Lipman, 1963; Spitz, 1966) have variously concluded that an array of factors have been responsible for diverse findings of investigations. These include such variables as the type of stimulus task (verbal versus pictorial material); the level of difficulty, meaningfulness, and symmetry or regularity of the stimulus material; the length of retention interval; the frequency and intensity of presentation; degrees of learning; levels of ability of children; and environmental histories of children.

The following three studies are representative of investigations on mnemonic functions that reveal diverse theoretical positions, methodologies and procedures, and findings and conclusions. In an attempt to verify their hypothesis that "retarded" persons suffer from characteristic short-term memory deficits, Ellis and Anders (1968) compared performances of 80 college students and 72 "retarded" persons of approximately equal chronological ages. The short-term memory task required response to paired geometric designs or meaningful pictures. In addition to ability level, intervening items and the meaningfulness of stimuli were varied. On the basis of the short-term memory deficit hypothesis, performances of "retarded" persons were expected to "decay" more rapidly than those of "normal" persons. The authors found that over-all performances of "retarded" persons were substantially lower than those of college students. They concluded that such evidence did not support the original hypothesis but, instead, indicated a "defective encoding process."

In another study consisting of two experiments, Gerjuoy and Spitz (1966) investigated "the growth of clustering and free recall as a function of age, intelligence, and practice (p. 919). In Experiment I, they compared the performances of adolescent "educable retarded" persons, "normal" adolescents of equal mental ages, "normal" persons of equal chronological ages, and college students. The experimental task required recall of a 20-item list of five words from each of four categories. The authors found that performances of "retarded" and "normal" individuals, having similar mental ages, did not differ significantly and that performances of these two groups were significantly lower than those of individuals, having equal chronological ages, and college students. In Experiment II, the authors sought to determine whether presented and requested clustering of words would facilitate recall of institutionalized, "retarded" persons. They found that recall of "retarded" persons was increased under both conditions to an extent that their scores approached those of "normal" subjects. The authors concluded that although "retarded" persons revealed low performances on recall tasks as an apparent result of deficits in spontaneous organization, they are able to utilize external organization and, thus, function at higher levels of performance.

Finally, Johnson and Blake (1960) conducted a series of four studies intended to evaluate learning characteristics of "mentally retarded" children. One of these studies focused on memorization, recognition, recall, and savings; a second study investigated proactive and retroactive inhibition. In Study I, the authors compared performances of 30 "retarded" and 30 "normal" children, having similar mental ages, who were selected respectively from special and regular classes. On the basis of a variety of tasks using nonsense syllables, the authors found that "retarded" and "normal" children did not differ significantly in terms of memorization, recall, or savings. With regard to performance on recognition tasks, the results did not appear to be clear-cut. On the first of three tests, differences favoring "normal" children in acquisition of greater numbers of words with superior accuracy were found to be significant. In Study II, the authors compared performances of groups of 80 "retarded" and 80 "normal" children, which were subdivided into two control and two experimental groups. The authors concluded that:

> Of the six hypotheses tested concerning retroactive and proactive inhibition, it was found that the learning of normal children was affected by a previously learned task of the same nature[2] and having the learning of a task interrupted by the learning of a task of a similar nature.[3] The learning of mentally handicapped children was affected by a previously learned task of the same nature but not by having the learning of a task interrupted by the learning of a task of a similar nature. The mentally handicapped children were affected to a significantly smaller degree than the normal children by both proactive and retroactive inhibition (p. 74).

On the basis of the Johnson and Blake findings, it seems evident that not all aspects of mnemonic functions, necessarily, are affected by proactive and retroactive inhibition.

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[2] The authors have defined such effects as "proactive inhibition."

[3] The authors have defined these effects as "retroactive inhibition."

Visuo-motor functions. Visuo-motor tasks frequently have been employed as measures of specific aspects of cognition (Ayers, 1969; Beery, 1967; Frostig et al., 1966), often designated as perceptual-motor functions, and as indicators of general mental development and a variety of designated pathological conditions (Bender, 1938; Harris, 1963). In particular, a number of researchers and clinicians have used visuo-motor tasks in diagnostic evaluations of children considered to be "mentally retarded" (Alley, 1968; Alley & Carr, 1968; Bender, 1938; Bensberg, 1952; Gallagher, 1957, 1960; Keogh & Keogh, 1967; Silverstein, Ulfeldt, & Price, 1970) and/or "brain-injured (Cruickshank et al., 1961; Strauss & Kephart, 1955; Strauss & Lehtinen, 1947). Like conceptualization, language, and memory, visuo-motor functions involve multiple intellectual processes. At present, research in the field of mental retardation on this aspect of cognitive functioning is fragmentary and too limited in scope to allow for meaningful interpretation of such learning disabilities in children considered to be "mentally retarded." Moreover, findings of studies are discrepant. For example, it has been a frequent assumption that visuo-motor dysfunctions are more common among children variously labeled "perceptually handicapped," "brain-injured," and "learning disabled" than among children termed "cultural-familial." Yet, studies investigating this issue (Bensberg, 1952; Gallagher, 1957) have yielded conflcting results. While findings of a study conducted by Bensberg seemed to confirm this assumption, Gallagher found that comparisons between performances of "brain-injured" and "cultural-familial retarded" children disclosed only minor differences on a marble-board task. Such discrepancies may lend support to Bender's (1938) observation of performances on her Visual Motor Gestalt Test; i.e., children classified as "mentally retarded" reveal not simply lower levels of integrated gestalts commensurate with their mental ages, but considerable variation in their productions. Too, with respect to the use of performances on tasks as indicators of particular etiologies, the validity of such approaches seems highly questionable.

Furthermore, in light of the central role of visuo-motor functions in development of later cognitive functions (Piaget, 1952), two issues which have been little explored seem important. They are: (a) the extent to which and ways that visuo-motor dysfunctions slow intellectual development; (b) the extent to which educational strategies change performance on specific visuo-motor tasks and on academic tasks which involve visuo-motor functions. In a study of the effects of short-term visuo-motor training, Alley (1968) reported findings of negligible change in posttest performance of children on sensori-motor, visual perception, and concept formation tasks. On the other hand, in a more comprehensive four-year experimental study of the effects of tutoring on performance of "brain-injured mentally retarded" children, Gallagher (1960) found that children of the experimental group showed marked gains on perceptual-motor tasks during the first year. This growth appeared to correlate with changes in verbal areas. During the second year of the study, there was less advance in performance. Finally, pointing up the fact that chronological age, also, may be a crucial determinant of degrees of change, Edgar et al. (1969) investigated the effects of intensive sensori-motor training on adaptive behavior. The authors reported substantial gains of an experimental group of 11 children, ranging in age between three and eight years, on Language, Motor, Personal-Social Schedules and in a total score. On an Adaptive Behavior Schedule, differences between the control and experimental groups were not significant. The authors speculated that "play with educational toys," which children of the control group experienced, may have contributed to the latter finding.

Visual functions. In psychological research, visual functions, frequently termed "visual perception," have been variously defined by researchers and explored through a vast array of different methodologies (Wohlwill, 1960). Specifically, such functions have been designated as including any of a large number of processes ranging from sensation to comprehension of complex visual stimuli. No doubt, these varying conceptions have had considerable bearing on the direction of research in the field of mental retardation and may account for some of the confusion of interpretation with respect to visual dysfunctions of children.

In general, these observations may be made about studies of visual disabilities of "mentally retarded" children.

(a) Among several studies (Gallagher, 1960; Silverstein, Ulfeldt, & Price, 1970; Stearns & Borowski, 1969), there have been indications that children classified as "retarded" do have varying visual disabilities. However, often conclusions have been drawn on a basis of performances of children on selected tasks, rather analyses of developmental processes. It is quite possible that such studies may not yield definitive information relating to developmental and academic variations of children. For example, studies of visual discrimination (Spivak, 1963) may not shed much insight on important cognitive developments such as acquisitions of visual constancies, or space, distance, and position concepts. The writer agrees with Blom (1969), who has made this contention: Because of our paucity of research on specific dimensions of "perception," we yet know very little about how impairment in one or more aspects of visual functioning may affect accomplishment of academic tasks.

(b) To a large extent, investigations have centered on isolated issues, which appear to be irresolvable. For example, sparked by the work of Kephart, Lehtinen, and Strauss (Strauss & Kephart, 1955; Strauss & Lehtinen, 1947), a number of studies (Keller, 1962; McMurray, 1954; Rubin, 1969; Werner & Thuma, 1942a, 1942b) have been devoted to determinations of differences between performances of "brain-injured" and "cultural-familial retarded" children.

(c) There seems to be little consideration given to possibilities that psychological variables other than cognitive functions, such as distractibility or lack of attention, may be affecting performances of children. In a review and commentary on studies on "perceptual processes" of "retarded" children, Spivak (1963) noted that most investigations have involved older persons residing in institutions. As mentioned earlier in this review of the literature, Zigler (1966a) and his colleagues have investigated some potential effects of such environmental settings.

Auditory functions. Although some researchers (Myklebust, 1954; Johnson & Myklebust, 1967) have suggested that auditory disorders may be more severely impairing than visual disabilities to learning, there has been very little research in mental retardation leading to support or rejection of speculations about characteristic auditory deficits of children. Primarily, studies have been concerned with assessments of sensory, hearing impairments

(Dansinger & Madow, 1966; Fulton, 1967; Lloyd & Melrose, 1966). A few researchers have considered selected aspects of "auditory perceptual abilities." For instance, Hunt and Patterson (1958) compared performances of 26 "brain-injured" and 26 "familial mentally deficient" children in their abilities to order auditory and visual stimuli into meaningful sequences. They reported that "familial" children performed better on all three sections; i.e., visual, auditory, and combined. Gruber and Steer (1965) conducted a study of performances of 37 institutionalized children on auditory memory span, auditory discrimination, and auditory-visual synthesis tasks. They hypothesized that there were no differences between performance scores of male and female "retardates," of subjects representing three etiological classifications, and of children with high and children with low articulation indices. The three hypotheses were upheld. In part, these findings appear to run counter to results of the Hunt and Patterson study, which revealed differences between etiological groups. A third study by Schlanger (1958) evaluated speech perception of 24 "brain-injured retarded" children. Schlanger used ambient noise, continuous noise, and music as varying backgrounds against which monosyllabic word-pairs were presented. He found no differences in discriminations of children under these three varying conditions.

The preceding section has considered research on disorders in cognitive functioning of "mentally retarded" children. In essence, these studies, related reviews, and commentaries have been concerned with ascertaining why certain children are not performing cognitive tasks and acquiring academic skills in accordance with developmental norm expectancies. On the one hand, many of these studies appear to have differentiated specific cognitive dysfunctions which some researchers have termed "characteristic deficits." At the same time, however, repeated findings of variability in performance and behavior of children and the interdependence of cognitive and affective behavior in total psychological functioning appear to argue against such a contention of single characteristic disorders. Stated in another way, the issue is this: Are learning difficulties of children termed "mentally retarded" attributable to one identifiable deficit which has a generalized effect on performance and learning or, instead, symptomatic of multiple disorders which bear, in varying combinations, on behavior? Like studies on cognitive dysfunctions, the present investigation is concerned directly with this issue. Similarly, it underlies studies on learning processes.

Disorders in Learning Processes

One of the major ways in which children who experience learning problems appear to differ from children who learn "normally" lies in the slowness and inefficiency with which they acquire knowledge and academic skills (McGrady & Olson, 1970; Robinson & Robinson, 1965). Disorders in cognitive functions may constitute one source of these variations. Disorders in learning processes may constitute a second source. It is not a purpose of the present section to review, in any great detail, the large and increasing numbers of studies on selected aspects of learning in "mentally retarded" children. In relation to the present study, a brief consideration is included for the following reasons:

(a) Central to the remediation program was an assumption that children would change or learn. An understanding of those disabilities in learning processes which might account for failure to acquire and/or retain knowledge and academic skills was conceived to be important.

(b) In addition to performance on clinical tests, classroom observation of behavior during the teaching-learning process constituted an important aspect of evaluations of psychological functioning of children. Such clinical assessments may appear to bear little resemblance to the highly experimental nature of most studies on learning characteristic of "mentally retarded" children. Yet, after all, they may be just as or, perhaps, more revealing of learning processes in children. Equally important, they may disclose some characteristics of teaching-learning situations that appear to promote or hinder meaningful learning in children.

A review of investigations has failed to reveal a coherent picture of learning deficits in "mentally retarded" children. This finding is not surprising in light of the nature of the majority of studies conducted to present and the fact that many investigations have disclosed conflicting results. In particular, research on learning in "mentally retarded" children has been concerned, primarily, with distinguishing specific response characteristics that appear to differentiate children thus classified from "normal" children of equal chronological or mental age levels. Reflecting diverse positions on or theories of learning, studies have utilized a wide range of varying methodologies and procedures to explore designated characteristics. Furthermore, attempts to integrate findings into inclusive conceptions toward understanding total mental functioning and teaching children who experience learning difficulties have been markedly absent. These conclusions are based on examinations of the following research.

Among many possible dimensions for study, these aspects of learning in "retarded" children have received particular attention by researchers. They include: (a) interproblem transfer of learning (Bryant, 1965; Gerjuoy & Alvarez, 1969; Johnson & Blake, 1960); (b) discrimination learning (Miller, Hale, & Stevenson, 1968; Stevenson, 1963; Stevenson & Zigler, 1957; Zeaman & House, 1963); (c) paired-associate learning (Baumeister, 1968; Blue, 1970;

Borkowski & Johnson, 1968; Johnson & Blake, 1960; Prehm, 1966); (d) learning set (Kaufman & Gardner, 1969; Stevenson, 1963); and (e) expectancy, locus of control, and approach-avoidance tendencies (Cromwell, 1961, 1963; Gardner, 1966; Wachs & Cromwell, 1966). In addition, a number of studies, cited earlier in the section on mnemonic functions, have explored short-term recall and long-term retention in relation to learning characteristics of "retarded" children.

The following points summarize some major implications of this research.

1. Evidence from a number of the aforementioned studies (Bryant, 1965; Miller, Hale, & Stevenson, 1968; Johnson & Blake, 1960; Zeaman & House, 1963) have suggested that children termed "mentally retarded" experience difficulty in learning. Yet, these and other studies (Gerjuoy & Alvarez, 1969; Prehm, 1966) have indicated, also, that such disabilities may not necessarily reflect universal impairment in learning across different tasks, or even, uniform performance during the course of a single acquisition. For example, in accordance with their Attention Deficit Theory, Zeaman and House (1963) have postulated that processes of learning in "retarded" children break down in initial rather than final stages of task accomplishment. Further, they have contended that, once attention is centered on "relevant" cues and learning is

initiated, visual discrimination proceeds more "normally."

2. Further in accordance with the first point, several studies (Johnson & Blake, 1960; Miller, Hale, & Stevenson, 1968; Prehm, 1966) have recognized differences in rate and probability of learning across different tasks. In reviewing a number of studies on learning, Goulet (1968) and Lipman (1963) have pointed out that these variations may be attributable to such factors as differences in the nature of experimental stimuli (e.g., the meaningfulness or level of difficulty of tasks) and/or rates of presentation. Another explanation for these learning differences among children, observed in response to varying experimental conditions, is suggested in a summarizing statement by Hilgard and Bower (1966) on theories of learning. They have advanced the hypothesis that, perhaps, there are various kinds of learning that follow different laws or rules during courses of acquisition. Investigations centering on this speculation are yet nonexistent. Yet, future studies not only might provide greater understanding of particular aspects of learning but add further dimension to important, unresolved issues of cognitive development in children who do and do not experience learning difficulties; e.g., processes of development of cognitive structures. Although cast in psychoanalytic terms, Rapaport's (1960) comment on the need for a comprehensive theory of learning is pertinent to this issue.

> Psychoanalytic theory . . . has no learning theory of its own to pit against conditioning. This lack is not palliated by the demonstration that the conditioning theory of learning does not meet the empirical requirements (e.g., automatization problems, structure formation, distinction between primary and secondary processes) which a psychoanalytic learning theory will have to meet. Psychoanalysis will be totally free of embarrassment from this quarter only when it has a learning theory which not only fulfills its own empirical and theoretical requirements, but is also broad enough to account for conditioning phenomena--including the conditioned analogues of "unconscious mechanism"--as special cases (p. 117).

3. A number of researchers (Cromwell, 1961, 1963; Gardner, 1966; Wachs & Cromwell, 1966) adhering to a social learning point of view have investigated "learned" personality or behavioral patterns that appear to have adverse effects on "social and intellectual efficiency." Paralleling the experimental work of Zigler and his colleagues (Zigler, 1966a) in support of a motivational hypothesis of cognitive functioning, they have focused on this problem: How do "retarded" children modify their behavior "as a function of success or failure in prior experience" (Cromwell, 1963, p. 46)? Central to this social learning theory approach is a proposition that, in comparison with "normal" children, "retarded" children have high expectancies of failure. Data confirming more specific postulates and corollaries of prediction relating to this hypothesis have not been consistent (Cromwell, 1963). However, greater refinement may provide an important possibility for exploring unresolved issues of how some children learn to learn ineffi-

ciently and how those behavioral manifestations may bear on subsequent learning.

General Levels of Academic Achievement

From the two preceding sections on Learning Disabilities and Mental Retardation, it should be evident that innumerable, underlying factors, still largely unexplored, may account for low achievement of children on various academic tasks. Inconsistent findings of a number of studies which have compared academic performance and social adjustment of "retarded" children attending special and regular classes and of "normal" children attending regular classes are a further testament to the complexities of understanding why children fail to achieve levels of expectancy on academic tasks. More specifically, many studies evaluating language and reading performance of "retarded" children, a particular interest of the present investigation, have been unable to demonstrate any degree of unanimity as to high versus low achievement. While some studies (Dunn, 1954; Durrell & Sullivan, 1958; Groelle, 1961; Hemenway, 1965; Speidel, 1958) have reported that children were functioning below levels of expectancy as designated by their mental ages, other investigations (Blatt, 1958; Goldstein, Moss, & Jordan, 1963) have left open the question or disclosed that children were functioning up to or in excess of an expectancy level. In addition to methodological problems such as sampling (Kirk, 1964; Quay, 1963) which have complicated interpretation, there are further difficulties in evaluating results of such studies. These additional problems center, primarily, on the following issue; i.e., such investigations have failed to forge the diagnostic gap between determinations of more general levels of dysfunctioning and specific cognitive-learning disabilities. Thus, on the basis of results, one may speculate little beyond the more obvious fact that cognitive and learning dysfunctions bear, to varying degrees and in different ways, on performance and behavior of children. Critical questions of "how" these factors interact are left unanswered. Pointing out the principal intent of ascertaining advantages and disadvantages of special class placement which underlies many such investigations, some researchers may disagree with this point of view. However, in the opinion of the writer, such issues are irresolvable without more insightful, descriptive data about children, their teachers, and their interactions during the teaching-learning process.

Summary and Conclusions: Mental Retardation, Performance and Behavior Variance

The foregoing chapter has included considerations of specific issues relating to research on Conceptions of Mental Retardation, Conceptions of Cognitive Functioning, and Mental Retardation and Learning Disabilities. Emerging from examination of this research, one central notion has been recurrent throughout discussions. It is this: Despite persistent attempts of researchers to conceptualize conditions of mental retardation and to study psychological impairments in accordance with assumptions of homogeneity, findings have revealed that performance and behavior of children termed "mentally retarded" are widely variant. The conception is not especially new to research on mental retardation. It has become an increasingly prominent view, largely influential toward changing continuing, archaic assumptions about mental retardation.

Yet inevitably, such a conception leads to considerations that are difficult to conceptualize and that pose major problems for highly specific research investigation. Difficulties arise from the fact that widely variant performance and behavior of children termed "mentally retarded" originate from many neurophysiological, psychological, and environmental sources. Specifically, a child's somatic structure; cognitive, learning, and affective characteristics; home or residential, school, and community environments, in addition to contemporary experimental and clinical interactions are all factors that affect his behavior and performance in intensive and, possibly, unique ways. Further, they may contribute, in largely unknown ways, to variance in performance and behavior among different children and/or within individual children over extended periods of time.

In large part, researchers in mental retardation have not focused study on performance and behavior variance. Instead, research efforts have been centered on more narrow ranges of concentration toward discerning specific or general characteristics that distinguish groups of "retarded" children from other clinical groups and "normal" children. Such a direction is clearly understandable in light of the complexities involved in more clinical approaches to children; for it substantially limits the scope of almost countless factors to a more comfortable and manageable level of consideration. However, there is another view relative to this point which constitutes a central contention of the present study. It is this: that an increased understanding of wide dimensions of behavior and performance variance of children termed "mentally retarded," after all, may reveal important commonalities with as well as differences from children who are conceived to learn "normally." Moreover, such a view may help to rekindle our sensitivities toward a more compassionate recognition of man's vulnerability to trouble and may help to increase our awareness that being sick and being well, being "subnormal" and being "normal," are really matters of subtle balance (Bruner, 1966).

CHAPTER III

METHODS AND PROCEDURES

The present chapter will discuss methods and procedures which were selected and, to a degree, modified over a two-year period in accordance with a central purpose of studying, in intensive ways, performances and behaviors of learning disabled children. The chapter will include four major sections: (a) The Design of the Study; (b) Procedures for Selection of Subjects; (c) Procedures of Evaluation; and (d) Procedures of Intervention: The Remediation Program.

The Design of the Study

Rationale for Case Study Structure

Primarily, this project was conceived as a case study of children. This intent was reflected in three major aspects of the original design of the project: (a) the selection of a small sample of children, (b) extensive diagnostic evaluations, and (c) a remediation program which embraced a wide spectrum of therapeutic and educational techniques on several developmental levels of performance.

As opposed to a large number of children randomly assigned to experimental and control groups, the initial sample was limited to one group of 48 children. This decision was a major departure from procedures applied in much research in the field of mental retardation where studies have made several assumptions that tended to simplify extremely complex issues. For example, matched on a basis of designated variables such as IQ, mental age, chronological age, attendance of regular versus special class, or social class, children have been considered as representative of discrete, homogeneous groups of particular placements or etiologies. In some instances, conclusions have been drawn that differences revealed among children could be attributed to one or two distinguishing characteristics. Moreover, changes in global performance often have been ascribed to uniformly applied experimental programs. Such procedures and conclusions have ignored or failed to come to grips with numerous factors that contribute to individualities of impaired, as well as "normally" functioning children. More particularly, many sources, including unique configurations of cognitive processes, the motivations of children for learning, self-concepts of children, the climate of educational settings, and teachers, provide conditions that either retard or enhance intelligent behavior. While these factors introduce variations into the learning process that are not easily defined, they remain critical to the assessment and understanding of intellectual performance. A greater number of children would have precluded intensive clinical and diagnostic evaluations, one major focus of the project.

The study of human behavior is a complex task. Attempts to change that behavior require profound insights and deep investments. In accordance with the second central purpose of the project, i.e., the observation of specific learning disabilities of children in response to certain teaching strategies and techniques, the remediation program was developed. Again, in view of probable extensive involvements foreseen at the commencement of the study, a small sample of children seemed appropriate. These perspectives were founded on several observations; namely, from personal experience with children in special classes and clinical settings and from reports in the literature on diverse intellectual and affective behaviors of exceptional children, the writer anticipated that future planning and implementation of the remediation program would necessitate considerable individualization of teaching strategies and techniques. Furthermore, in order to meet the varying needs of the children, the concentration of these remediations would run the gamut of developmental levels and areas of cognitive functioning. The writer's awareness, too, that teachers who were responsible for the program would also require support and carefully guided instruction, added another dimension to the already difficult undertaking of promoting change in children. In light of some views expressed previously in this section, it did not seem to be a misjudgment to assume that substantial positive change in children might not occur without change in teachers. In a sense, change in children would be a reflection of not only their potentials, but also those of their teachers. Recommendations for the application of appropriate materials and techniques could be described in detail to teachers. Yet, without an inner security, a firm conviction that children do change, a sensitivity to individual needs for respect, affection, and understanding, and an awareness of the impact of frustrations with learning, they would be incapable of bringing to the remediation program a new alternative to previous experiences of their children. Superficial mechanics of routine would not be enough, for the wells of deeper and more meaningful learning spring from the realm of human interaction and compassion.

Studies in mental retardation have assessed changes in academic achievement and general levels of intelligence over time with and without the benefit of specialized programs. However, on the basis of their results, the intricacies of the complex processes which likely fostered learning can never be explained. It was the intent of this investigation as a case study to capture and to record a few of those moments in time, and in their light, to re-examine later the question of how children learned.

A General Plan of the Study Over a Two-Year Period

Over a two-year period, the general plan of the study included extensive clinical evaluations of children. These assessments were based on a premise that dysfunction in several modalities and learning processes and/or moderate to severe behavioral disturbances might hinder or preclude the attainment of more encompassing academic skills. Table 1 outlines the general plan of the study which was commenced in May 1968 and terminated in June 1970.

A primary interest surrounding activities of the preliminary and diagnostic phases was an exploration of individual learning and behavioral characteristics of children who were considered, by public school authorities, to be mildly to moderately retarded. Thus, during spring of the first year, background information which was considered to have potential bearing on current placements, former difficulties in school, and handicapping physical anomalies was collected from cumulative school records. Beginning in September of 1968 and continuing throughout the course of the first academic year, a battery of seven perceptual, conceptual, language, reading, and general intelligence tests was administered, in addition to extensive classroom observations and tape-recordings of reading sessions.

TABLE 1

OUTLINE OF STAGES OF PROGRESS OF STUDY OVER TWO-YEAR PERIOD

Time Schedule		
Preliminary Phase May-June 1968	Year I Diagnostic Phase Sept. 1968-June 1969	Year II Implementation of Remediation Program Sept. 1969-June 1970
Selection of initial sample for inclusion in study	Selection of final sample	
Collection of data from cumulative	Observation of classes and establishment of reliability of Principal Director as an observer	Meeting with teacher-consultants during three-day workshop at Boston University (Sept. 15-17). Presentation of plan for remediation program
	Initial phase of diagnostic evaluations. Administration of: Stanford-Binet ITPA Detroit Frostig Bender Gestalt Durrell Analysis Murphy-Durrell	Pretest evaluations prior to commencement of remediation program (Sept.-Oct.) Administration of: ITPA Detroit Frostig Bender Gestalt Durrell Analysis Murphy-Durrell
	Recording of instructional sessions	Observation of classes and follow-up of development and implementation of remediation program
	Analysis of learning profiles and delineation of specific learning disabilities	Posttest evaluation (May 15-June 15). Administration of: Stanford-Binet, ITPA Detroit, Frostig, Bender Gestalt, Durrell Analysis, Murphy-Durrell

From insights provided by initial assessments, learning profiles compiled to describe configurations of individual child performance in six areas of cognition, and observations of children in response to academic tasks and instruction, the remediation program was developed. During this phase, attempts to structure learning were made and probabilities for change were examined. In order to re-evaluate previous diagnoses of learning difficulties and current levels of functioning, a second battery of clinical tests was given to children prior to the commencement of the remediation program. Subsequent follow-up of children, support to teachers, and supervision of program activities involved weekly observations throughout the second school year and posttest evaluations in May and June of 1970.

A Clinical Model as a Framework for the Diagnosis and Remediation of Specific Learning Disabilities

Other than the initial decision to pursue this project as a case study of children, the development of a clinical model as a framework for the diagnosis and remediation of learning disabilities remained most crucial to the conceptualization of the study. Assumptions in the formulation of this model, later, would directly determine the following important aspects of the design for methods and procedures:

(a) the designation of particular modalities and processes of learning for evaluations;

(b) the selection of particular evaluation instruments;

(c) the design of learning profiles compiled to differentiate learning disabilities;

(d) the designation of certain modalities and processes of learning for concentration in the remediation program;

(e) the selection of certain materials and educational programs for the remediation of disabilities;

(f) recommendations outlined to teachers in terms of strategies and techniques for the implementation of the remediation program with individual children;

(g) expectations for change of individual children.

Subsequently based upon certain theoretical conceptions and points of view and personal experiences of the writer, the clinical model was planned to include:

(a) an analysis of cognitive processes and modalities underlying more general intellectual functions and academic performance;

(b) the relationships among these processes and modalities, and between general functions and underlying processes;

(c) a progressive sequence of differentiation and integration of tasks through a development of cognitive processes;

(d) a schema describing the relative impact of individual child psychodynamics and environmental-educational influences upon intellectual performance and learning.

The diagram in Figure 1 represents a general conceptualization of these relationships. These conceptions should be considered appropriate for children in this study who were functioning on mental age levels of approximately 5 to 12 years.

Fundamentally, the model describes behaviors of children in terms of two major spheres of influence which are separate, yet related and interdependent. These two sources of behavior--i.e., the realm of interaction and child psychodynamics, and general levels of intellectual performance and academic achievement--in turn, are composed of numerous specific and related areas of functioning and influence which, also, are separate but related. In Figure 1, arrows, moving from inner concentric circles to larger circles and from outer to inner spheres, are intended to represent these mutual relationships. In essence, the model affirms that general intellectual functioning and performance never occur in isolation. They are part of a totality of behaviors which are constantly changing. Similarly, levels of performance, disabilities and particular abilities, affect the psychodynamics of an individual child and relationships with his immediate family, his educational environment, and his peers. Implicit, too, within the

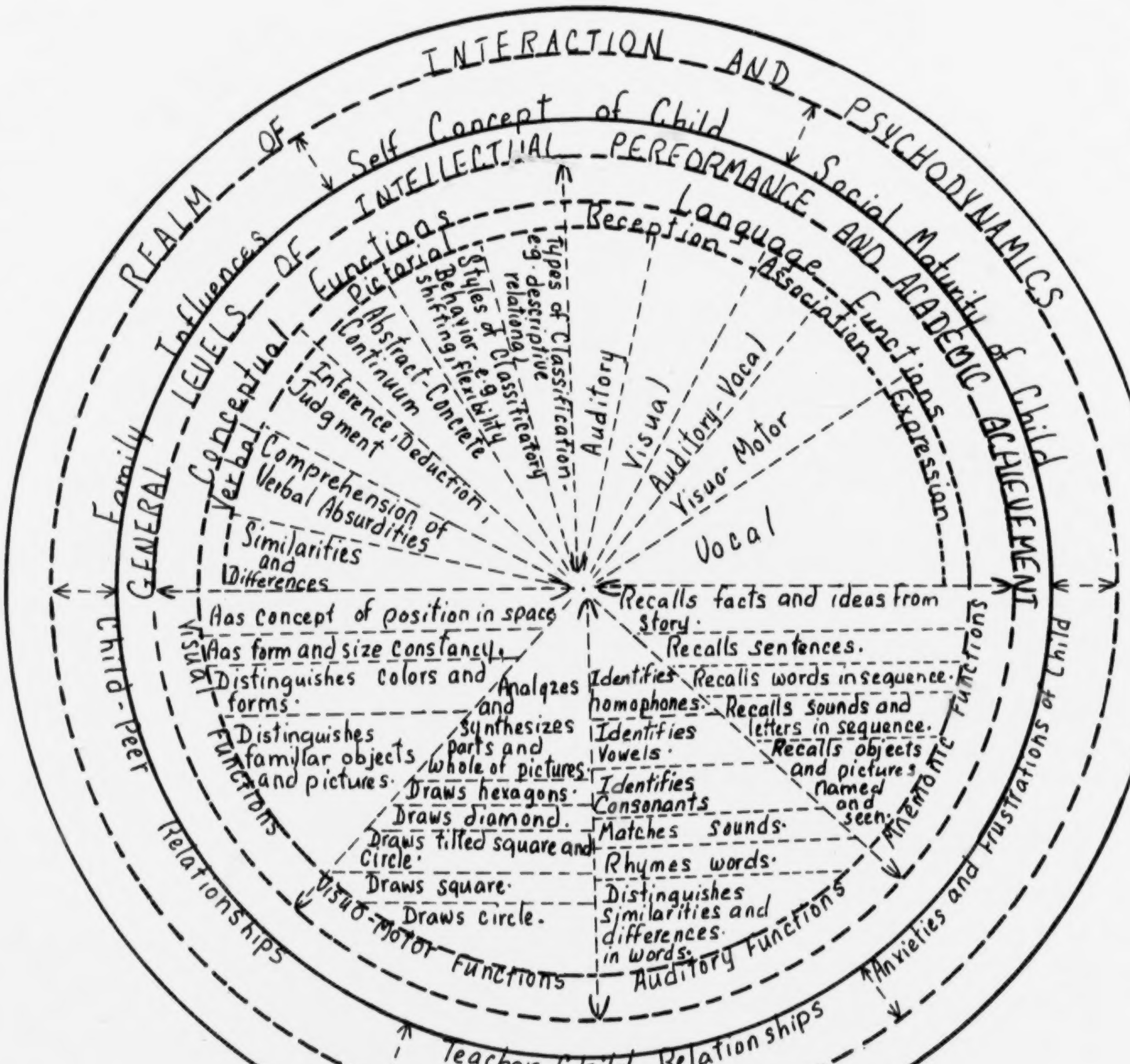
REALM OF INTERACTION AND PSYCHODYNAMICS
Self Concept of Child
Social Maturity of Child
Family Influences
Child-Peer Relationships
Teacher-Child Relationships
Anxieties and Frustrations of Child
GENERAL LEVELS OF INTELLECTUAL PERFORMANCE AND ACADEMIC ACHIEVEMENT
Conceptual Functions
Pictorial
Verbal
Types of Classification: e.g. descriptive relational
Styles & Classificatory Behavior e.g. shifting, flexibility
Abstract-Concrete Continuum
Inference, Deduction, Judgment
Comprehension of Verbal Absurdities
Similarities and Differences
Language Functions
Reception
Association
Expression
Auditory
Visual
Auditory-Vocal
Visuo-Motor
Vocal
Visual Functions
Has concept of position in space
Has form and size constancy.
Distinguishes colors and forms.
Distinguishes familiar objects and pictures.
Analyzes and synthesizes parts and whole of pictures.
Visuo-Motor Functions
Draws hexagons.
Draws diamond.
Draws filled square and Circle.
Draws square.
Draws circle.
Auditory Functions
Identifies homophones.
Identifies Vowels.
Identifies Consonants
Matches sounds.
Rhymes words.
Distinguishes similarities and differences in words.
Mnemonic Functions
Recalls facts and ideas from story.
Recalls sentences.
Recalls words in sequence.
Recalls sounds and letters in sequence.
Recalls objects and pictures named and seen.

FIG. 1. Diagram of a clinical model representing a framework for the diagnosis and remediation of learning disabilities.

general conceptualization of this model is an understanding that although for each child these relationships are considered appropriate, the portrayal of these influences, in reality, will be unique to each child.

Looking at other, more specific aspects of the model, it is apparent that larger spheres of behavior are represented to consist of multiple functions and sources of impact. In particular, levels of intellectual performance and academic achievement require an accomplishment of tasks in six areas of intellectual and learning processes: (a) visual functions, (b) visuo-motor functions, (c) auditory functions, (d) mnemonic functions, (e) language functions, and (f) conceptual functions. Likewise, the realm of interaction and psychodynamics includes at least six sources of impact: (a) the self-concept of the child, (b) social maturity of the child, (c) anxieties and frustrations, (d) teacher-child relationships, (e) child-peer relationships, and (f) family influences. In reference to the diagram, the broken lines subdividing the second outermost circle and radii of the innermost circle indicate that, while separate, areas of functioning and sources of impact are closely related, sometimes overlap, and mutually affect respective domains of activity. This may mean, for instance, that anxieties and frustrations experienced by some children are debilitating to an extent that they affect not only general levels of intellectual performance and academic achievement, but also their relationships in school, at home, and personal feelings and attitudes about themselves. Furthermore, the model suggests that as a result of the interdependence of cognitive functions, disabilities in one area may produce disabilities or impede growth in other related areas. For example, auditory dysfunctions might be expected to retard certain aspects of language development or affect mnemonic functions.

Finally, although it is impossible to express in the context of one model all of the countless factors which may participate in processes of change, general representations help to clarify certain conceptions about growth in young children. More specifically, according to the diagram, visual, visuo-motor, auditory, and mnemonic functions are considered basic and critical to a development of larger, more encompassing language and conceptual functions. In other words, primary areas are tools which foster and enhance later and more complex processes. For this reason, the four detailed areas of functioning have been placed in the lower half of the innermost circle with arrows directed toward the center and upper-half of the sphere of intellectual activity. This presentation does not mean that development in larger areas of functioning would be prohibited entirely by deficits in more basic areas; as stated earlier, functions are interdependent, but, also, they are conceived as being distinct. On the other hand, disabilities in one or more areas, quite likely, would alter certain aspects of a child's learning. Moreover, growth in primary and larger areas of functioning are viewed as proceeding at simultaneous yet differential rates of growth and according to their respective "laws" of development. Thus, while growth in the six areas consists of change and adaptations which are ever-expanding through an evolution of all processes, each of these areas, at the same time, progresses through its own hierarchal order of tasks. Examples of these tasks which are indicated in the model are provided to illustrate this progression from simple, more gross tasks to complex, more refined, and integrated achievements.

In conclusion, this clinical model has been presented as an aid to understanding of some extremely complex processes of child development and growth as conceived by the writer. These conceptions have been drawn from several sources in the literature on theories of child development, studies on individual differences of children, theories of intelligence, and studies on learning disabilities of children. The implications of many of these conceptions, perhaps, will seem still unclear, for numerous questions have been left unanswered. Such ambiguities reflect that, among inconsistencies and diverse points of view reported in the literature and from personal observations, the writer's understanding of children is yet at a formative stage of development. However, if the prime intent of this presentation has been accomplished, it should be clear that the model is flexible to a degree which allows for its application to study learning processes and affective behaviors of individual children expected to reveal extreme variability.

It should be evident, too, that children who display dysfunctions along several dimensions of activity are anticipated to achieve at lower general levels of performance than those who have disabilities more limited in scope (although caution in this statement also is warranted since some deficits may be more damaging than others to a child's development). In the expression of this idea--i.e., more specific aspects of performance detract from general levels of performance--the writer attempted to exclude, in particular, the possibility of viewing low achievement of some children as a consequence of "global mental retardation." Certainly, some children in the project would be more limited than others in their potentials for learning. Severely deficient in some processes for learning, they would never function on levels commensurate with those of other children. Yet, in predicting that these children never would change and show development in other areas of functioning, one draws a conclusion which is not justifiable from any point of view. At present, we do not know enough to draw such conclusions.

Implications of the Clinical Model for the Selection of Methods and Procedures in the Diagnostic and Remediation Processes

Although perhaps open to much speculation from other theoretical positions, certain assumptions underlying the selection of methods and procedures were made on the basis of conceptions outlined in the clinical model. In terms of the diagnostic process, the following plans were pursued.

1. A battery of clinical tests was selected. These included subtests appearing to provide measures of certain aspects of each of the six designated areas of intellectual functioning. Such measures would not be all-inclusive. However, they would allow for a fairly extensive sampling, across several different tasks, of designated functions. These procedures required not only the initial selection of particular instruments but additional insight for delineating where disabilities might be affecting achievement which necessitated an accomplishment of combined tasks. As clinicians who are involved in the assessment of children well realize, available evaluation instruments often do not measure single or intended functions. This problem complicated the subsequent analysis of diagnostic information.

2. Observational instruments which could be used to record the participation of children with their peers and teachers in educational environments were selected. It was anticipated that these

classroom observations might reflect patterns of learning and reactions of young children to academic tasks. In certain situations where children appeared consistently anxious or frustrated, such observations would be helpful in shedding light on new directions for instructional procedures.

3. A strategy was devised whereby specific learning disabilities could be operationally defined and differentiated. This task was especially difficult to accomplish, and at least two foregoing approaches (Gulliksen, 1950;[4] Myklebust, 1968[5]) were dismissed

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[4] Gulliksen (1950, pp. 262-360) has developed several strategies for equating and weighting different test scores. At one point in the course of the study, the possibility of utilizing these procedures was considered. Using differential weighting of scores whereby failure on a specified percentage of subtests could be determined, learning disabilities might be delineated. However, since no criterion to judge the weighting of these subtests was available or feasible to establish, the procedure was not employed.

[5] Rejecting mental age as an accurate indicator of general expectancy levels of performance, Myklebust (1968, pp. 4-9) developed a ratio to establish discrepancies between learning potential and achievement of children, which was used to define specified deficiencies in learning. This expectancy ratio is as follows:

$$\frac{\text{Mental Age} + \text{Life Age} + \text{Grade Age}}{3}$$

Deficits in learning were placed at a point of 10 percent discrepancy between an expectancy age and achievements in specified areas of learning.

For children in this sample, this procedure was not appropriate or valid. It would appear that, in using "grade age" of a child as part of the formula, Myklebust was making an assumption that all children have been given the benefit of certain experiences over a period of years in school. In relation to children placed in special classes who have experienced consistent and probably extreme before an arrival at a third and final decision. The key problem in this decision centered around two issues: (a) an operational definition of learning disabilities which would allow for deficits, differing in individual degrees of severity and involvement, to qualify as disabilities; and (b) the equating on one scale of many subtests and scores which had different norms and scoring systems. Both issues were resolved through a development of learning profiles for individual children, compiled on the basis of performance on numerous subtests.

Upon completion of procedures concerning the diagnostic process, strategies essential to the development of the remediation process were considered. Although the actual implementation of these procedures later would require revisions, initial plans laid a foundation for future reference. Thus, on the basis of relationships spelled out in the clinical model, the following decisions were made.

1. Materials and techniques were selected on the basis of their applicability to learning disabilities of children in the

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difficulties in both regular and special settings, this assumption, universally, cannot be applied.

In addition, where children in the sample probably would display differential degrees of severity in learning disabilities, the ratio did not allow for sufficient flexibility in the differentiation process. Namely, while a particular discrepancy between learning potential and achievement would constitute a learning disability for one child, for another this might not be appropriate.

sample. Two factors were fundamental to these selections: (a) the particular intellectual functions and processes required for an accomplishment of various tasks, and (b) the apparent developmental levels of particular tasks. More specifically, activities focusing on the remediation of various aspects of visual, visuo-motor, auditory, mnemonic, language, and conceptual functions were included. In terms of their levels of relative difficulty, they ranged from approximately 5 to 12 years.

One especially important point mentioned earlier in the discussion of the clinical model deserves clarification here in its relationship to the remediation process and expectations for change in children; i.e., the model suggests and one major hypothesis of the study asserts that related intellectual functions will be influenced and enhanced by a remediation of underlying learning disabilities. Depending upon one's model for change--i.e., that of learning disabilities or that of certain theories of child development--one's conception of growth in children will be interpreted differently. Put in another way, the question becomes twofold: (a) Is change in children to be viewed as the "educability" of certain disabilities to a level that is commensurate with the general expectancy level of performance for a particular child, or (b) Does growth represent movement from a lower to a successive "stage" of cognitive development? This issue cannot be resolved simply, for it entails qualifications along several dimensions which still are unclear and unexplored in the field of clinical and theoretical research. For example, although Piaget and Inhelder (Elkind & Flavell, 1969; Piaget & Inhelder, 1964; Piaget, 1968) have outlined general stages for the development of logical thinking processes of young children, it is extremely difficult to determine, from some expositions, how other intellectual processes and functions are related to this development. Other exponents of child development (Kohlberg, 1968; Sigel, 1964) have described preliminary attempts to move or to accelerate the progress of children through educational techniques and curricula. However, if one assumes that growth in different, yet overlapping, functions vary, the specific steps toward classroom practices become quite complicated. Furthermore, we know little of how certain disabilities, previous school instruction, and the psychodynamics of individual children may alter this progression.

In general, aspects from both points of view substantially influenced the writer's conceptions in the development of the remediation program. Yet, the extent to which the results of the study can be cast in specific terms and conceptions, such as "stage" and "acceleration," is limited. Certainly, the primary rationale for the remediation program derived from convictions that children placed in special classes do change. Further, if the hypothesis could be demonstrated that, in the presence of carefully structured, sequential tasks, specific functions and more global performance could be modified, the justification for the study would be largely fulfilled. However, the project remains a preliminary step toward other investigations of "stage," "acceleration of learning," flexibility and expansiveness of learning processes of impaired children. It is for these reasons that the basis for specific methodologies of teaching in the remediation program rested more directly on current models related to the field of learning disabilities.

2. Subsequent to the general selection of methods and procedures and prior to their implementation in the classes, strategies for remediation were outlined for each of the 42 children remaining in the sample the second year. These decisions were made in light of learning profiles and individual subtests, and considerations of chronological and mental age levels of children.

Further recommendations and developments of teaching strategies were delayed until the commencement of the remediation program; for over the first year of the diagnostic phase, children were expected to change. Also, it was impossible to foresee those procedures and techniques which would extend beyond the clinical model to the reality of individual teachers, children, and problems unique to their particular classroom settings.

Procedures for Selection of Subjects

Criteria for Initial Selection of Classes and Children

In June of 1968, six special classes located in Brookline, Framingham, Quincy, and Wellesley, Massachusetts, judged as representative of middle to upper middle class communities in the Greater Metropolitan Boston area, were selected for the study. With the exception of one community where two classes were located in a self-contained public school for "retarded" children, the sample was drawn from special classes in elementary public schools. Inclusion of these classes was contingent upon the following criteria:

(a) the willingness of a teacher to participate in the study;

(b) the commitment of a teacher to the same special class situation for a two-year period;

(c) minimum teacher experience of one year with regular or special class;

(d) a majority of children in a class ranging in projected age, beginning September 1, 1968, between 7 and 11-05 years;

(e) a majority of children in a class anticipated to be continuing in September 1968;

(f) according to school administration, a majority of children meeting criteria designated by the Commonwealth description of children in educable special classes.

In September 1968, of a total 83, 48 children in these six classes who met the above criteria of age and participation as of September 1968, were included in the study.

No attempt was made to restrict inclusion of children on the basis of IQ. This criterion was rejected in the light of practical and theoretical considerations. In particular, placement in educable special classes may be precipitated by a general inability to succeed on school-related tasks (Massachusetts Mental Retardation Planning Project, 1966), which the writer conceived to arise from more specific aspects of cognitive and affective behaviors. Furthermore, initial survey of cumulative school records disclosed that, over time, either IQs of individual children were quite unstable or variable as a function of such factors as examiner differences. In some instances, there was evidence of 15-and 20-point fluctuations within one or two years of evaluation. Also, the variety of intelligence tests administered over some six years prior to the commencement of the study thwarted efforts to determine current general intellectual functioning during the initial period of selection.

Selection of Initial Sample of Children

Table 2 summarizes general characteristics of the initial sample of children. Variations within and among classes, apparent in this table, are symptomatic of underlying difficulties encountered in the initial sample selection. More specifically, the limited availability of children in certain classes and the consequent unevenness in the distribution of the sample across the four communities and the six classes, reflects the uniqueness of each of the educational settings. Among the six classes there was little consistency in terms of total numbers of children in attendance, range in chronological age, levels of general or more specific academic performance, and the extensiveness of emotional overlay of some children. Moreover, a lack of homogeneity of chronological age, mental age, number of years in special class, and IQ characterized each of the classes.

TABLE 2

DESCRIPTION OF INITIAL SAMPLE BASED ON SPECIAL CLASS PLACEMENT, SEX, TOTAL NUMBER OF YEARS IN SPECIAL CLASS, CHRONOLOGICAL AGE, MENTAL AGE, AND IQ

Subject	General Characteristics						
	Placement		Sex	Total Years in Special Class	Chronological Age	Mental Age	IQ
	Community	Class					
1	A		F	1-00	11-03	8-10	77
2			F	0-00	11-03	9-02	80
3			M	2-00	9-03	8-04	85
4			M	1-05	10-04	8-04	78

Note: Mental age and IQ have been computed on the basis of 1968-69 evaluations of children during Year I of the study.

(continued on next page)

TABLE 2 (continued)

Subject	General Characteristics						
	Placement		Sex	Total Years in Special Class	Chronological Age	Mental Age	IQ
	Community	Class					
5	B	1	M	3-05	11-01	7-02	64
6		1	M	2-00	10-11	9-08	84
7		1	M	0-00	10-00	9-10	91
8		1	F	4-00	10-04	7-04	68
9		1	M	3-00	11-00	7-10	69
10		1	M	0-00	10-00	7-10	73
11		1	M	2-00	9-05	7-02	70
12		1	M	0-00	10-01	7-06	71
13		1	M	2-00	10-10	9-10	90
14		1	M	2-07	9-10	7-08	73
15		2	M	4-00	11-01	8-00	70
16		2	M	1-00	11-04	11-08	96
17		2	F	1-00	11-03	9-00	77
18	C	1	F	1-00	9-10	8-10	85
19		1	M	1-00	7-10	7-00	80
20		1	M	1-00	8-01	6-09	76
21		1	F	1-00	8-04	5-06	60
22		1	M	0-00	9-04	8-10	88
23		1	F	2-00	9-06	7-04	72
24		1	F	2-00	9-02	8-10	87
25		1	M	3-00	10-02	7-10	72
26		1	M	0-00	7-11	8-04	98
27		1	M	0-00	7-10	7-02	85
28		2	F	2-00	9-05	7-06	74
29		2	M	1-00	9-07	8-08	88
30		2	M	1-00	7-09	7-05	90
31		2	M	0-00	8-01	7-06	91
32		2	M	1-00	7-07	5-04	62
33		2	F	1-00	8-05	8-00	93
34[a]		2	M	3-00	8-09		
35		2	F	1-00	9-04	7-10	77
36		2	M	4-00	10-05	7-04	70
37		2	F	0-00	8-03	7-06	81
38		2	F	3-00	10-04	8-04	75

[a] Scores for Child #34 were not obtained.

(concluded on next page)

TABLE 2 (concluded)

Subject	General Characteristics						
	Placement		Sex	Total Years in Special Class	Chronological Age	Mental Age	IQ
	Community	Class					
39	D		M	0-00	7-04	6-07	83
40			M	4-00	11-04	9-00	78
41			F	1-00	8-07	7-04	79
42			M	0-00	9-04	9-06	96
43			F	1-00	8-05	8-02	90
44			M	1-00	8-08	6-02	66
45			F	0-00	9-05	9-08	96
46			M	1-06	9-03	8-10	90
47			M	0-00	7-00	6-08	89
48			F	2-00	8-11	5-08	59

Subscript letters "A," "B," "C," and "D" indicate different communities.

Subscript numbers "1" and "2" indicate different classes located in the same community.

These observations during preliminary stages of subject selection began to reinforce suspicions that uniform patterns of learning among children might not be revealed and were not related, in any predictable way, to variables such as chronological age, mental age, and IQ. Further, the thought was entertained that, for many children, severity of mental retardation may have had little to do with original placement or continuance in special class. The more than occasional reference to "emotional problems," "emotional disturbance," "hyperactivity," and "behavioral problems" in cumulative records generally suggested that teachers who had encountered many of the children in these classes had experienced difficulties. It is conceivable that this factor, together with the actuality of learning problems which the children were experiencing, prompted recommendations for placement. Consequently, since the onset of the study, the awareness that children may have been placed, primarily, as a result of factors perhaps only remotely associated with mental retardation, has considerably limited possibilities for making generalizations about children in the sample.

General Discussion of Implications of Initial Sample Selected

General characteristics of the children and deviations from present criteria defining mental retardation (Heber, 1961; Massachusetts Mental Retardation Planning Project, 1966) tend to support a notion that special class placement is relative and is determined by community, class, and teacher variables as well as child performance and behavior. On the basis of the sample description in Table 2, it appears that children who suffered impairment in several areas of functioning, which was manifested in moderately lowered performance on a standardized test of general intelligence, were easily identified and more liable for early placement. Of seven children having IQs below 70, four had spent a minimum of two years in a special setting. The remaining three children of seven and eight years who had attended special class one year were too young, prior to September 1968, for inclusion in public school programs according to policies on age for admission. Another nine children in the sample received scores of 70 to 75. Likewise, there was a tendency for placement to have been initiated earlier. Only two of the nine had not been in special class for at least two years before the commencement of the study. Thus, for children below 75, inability to cope with elementary academic tasks, although in some instances also accompanied by secondary atypical behavior, may have been more singularly determinant in precipitating placement.

This trend, however, did not hold consistently for the majority of 31 children where IQs exceeded 75. Observation of the range in Table 2 discloses that 11 children obtained general performance scores on the Stanford-Binet Intelligence Scale of at least 90. Including this group, almost half of the total sample, 21 children, obtained scores exceeding 80. In view of at least one aspect of traditional criteria defining mental retardation, current functioning of many children in the study ran counter to expectations where, usually, children considered to be "educable" receive scores of 50 to 79 (Massachusetts Mental Retardation Planning Project, 1966). While some of these children had never been in special class, others had attended one to three years. These data raise several issues:

(a) Although guidelines defining mental retardation allow placement in exceptional cases where the needs of certain children require special therapeutic or educational techniques, could placement in special class have been circumvented through other avenues of remediation?

(b) Is placement probability related to the academic climate of schools and communities where children reside?

(c) If the performance of children changes to a degree where return to the regular classroom appears warranted, what factors enhance or prohibit such recommendations? Are these factors primarily child-oriented?

(d) As children become older, does the possibility of their return to the regular classroom become significantly lessened?

(e) Why are some children maintained in the regular grades until a chronological age of 10 or 11 years, then placed in special class? What factors have influenced placement, and are the effects of such placements more deleterious than beneficial to the total functioning of the children?

Response to these issues would vary across each of the communities and schools where educational needs of the children differed. At the same time, however, persistently confounding circumstances surrounding placement and educational strategies have made extremely questionable the advisability, appropriateness, or usefulness of universal descriptions or labels that categorize the performance of the children. Observations throughout the two-year period of the study revealed that equally vital to the current levels of functioning of the children were the reactions of educational communities which included school administrators, special class teachers, cooperating teachers, and other children. This does not imply that, given other educational settings, all learning problems would have been remediated. On the other hand, it does affirm that educational placements of children were often transacted without serious consideration or re-evaluation of alternatives which might have elicited lowered academic performance and/or maladaptive behaviors observed prior to, during, or following special class placements of children.

Reorganization of Classes during the First and Second Years

During initial stages of the project planning, criteria for class selection were narrowly conceived to minimize change of teachers and movement of children the second year during the course of the remediation program. It soon became apparent that this control was unworkable and undesirable. Extensive modifications were made throughout both the first and second years. These were undoubtedly a combined result of the long-term impact of the study upon teachers, school administrators, and children, and of normally occurring changes.

Table 3 graphically presents the reorganization of children in classes throughout the two-year period.

TABLE 3

REORGANIZATION OF CHILDREN DURING THE FIRST AND SECOND YEARS

Subject	Placement		
	Year I	Year II	Date of Transfer
1	A	A 2	August 1969
2	A	A 2	August 1969
3	A	Grade 3 (with tutoring)	December 1969
4	A	A	
5	B 1	B 2	August 1969
6	B 1	B 2	August 1969
7	B 1	B 2	August 1969
8	B 1	B 2	August 1969
9	B 1	B 2	August 1969
10	B 1	B 2	August 1969
11	B 1	B 1, B 2, B 3[a]	
12	B 1	B 1, B 2, B 3	
13	B 1	Moved to Rhode Island	May 1969
14	B 1	B 1, B 2, B 3	
15	B 2	B 2	
16	B 2	B 2	
17	B 2	B 2	
18	C 1	Grade 3 (with tutoring, C 4)	August 1969
19	C 1	C 1, C 2, C 3	
20	C 1	C 1, C 2, C 3	
21	C 1	C 1, C 2, C 3	
22	C 1	C 5	August 1969

(continued on next page)

TABLE 3 (continued)

Subject	Placement		
	Year I	Year II	Date of Transfer
23	C 1	C 1, C 2, C 3	
24	C 1	C 5	August 1969
25	C 1	C 1, C 2, C 3	
26	C 1	Grade 2 (with tutoring, C 4)	August 1969
27	C 1	C 1, C 2, C 3	
28	C 2	C 5	August 1969
29	C 2	Moved to Ohio	August 1969
30	C 2	C 1, C 2, C 3	
31	C 2	Grade 3 (without tutoring)	August 1969
32	C 2	C 1, C 2, C 3	
33	C 2	Grade 3 (without tutoring)	August 1969
34	C 2	Not included in ranking of data	
35	C 2	C 5	August 1969
36	C 2	Not included second year	August 1969
37	C 2	Grade 2 (with tutoring, C 4)	
38	C 2	C 5	August 1969
39	D	D	
40	D	D 2	August 1969
41	D	D	
42	D	D 2	August 1969
43	D	D 2	August 1969
44	D	D	
45	D	D 2	August 1969
46	D	D 2	August 1969
47	D	D	
48	D	D	

[a] Teacher B 3 left school after November 1969. Teacher B 1 returned but did not take major responsibilities for remediation strategies. These were assumed by teacher B 2.

During the first year of the total sample, one child moved to Rhode Island following completion of the initial diagnostic evaluation. After numerous testing efforts, a second child was excluded since he was able to complete only two of the seven tests administered. In August 1969, he was placed in a residential setting, then in October was returned to the original school placement. He did not participate in the study the second year.

All teachers of the initial six classes remained the entire first year.

During the second year, there were widely spread, unanticipated changes of teachers, children, and program facilities in all of the communities. Of the four children in class A, three were transferred--one to a regular third grade with the support of tutoring, the other two to an intermediate special class not included in the study which, however, cooperated in allowing the children daily instruction in class A for 30-minute reading periods. In June 1969, the teacher of class A left. A new teacher who had just received a degree in special education, who had no previous experience other than teacher training, was secured for this position.

Of the 10 children remaining in class B1, six were moved to class B2. The three children who were in class B2 the first year remained in this setting with the same teacher. In September 1969, expectations were, moreover, that the three children still placed in Class B1 would be carried in their own classroom under the direction of a newly hired and inexperienced teacher who also had just obtained a degree in special education. Unforeseen circumstances arose, however, and this teacher left school in November. Consequently, the decision was made that all children in Community B would be given instruction with the teacher of Class B2, who had participated in the study during the first year. The three children, subsequently, were withdrawn daily for 30-minute periods.

In Community C, which originally included two primary special classes, there were not only changes of teachers and children, but also a reorganization of facilities and instructional programs. Of the initial 20 children who remained throughout the first year, one moved out of state in August. Two children of Class C2 were returned to a regular third grade without special assistance and could not be followed. Three children--two of Class C1, one of C2--were partially integrated into regular second and third grades with the support of daily 30-minute tutorial sessions. Here, the teacher who had several years of experience with children in special class, but had not been in the study previously, gave instruction in a remedial class setting. Five other children from both classes were placed in an intermediate special class with another teacher of several years of experience who, likewise, had not participated the first year. Another child of Class C2, who was placed in a fourth school with none of the original children of Community C, was excluded after the initial evaluation period. In this instance, the pressures of time and guidance, required for other teachers, made visitation of a fourth setting impossible. Thus, in September 1969, only eight children of the original placement remained. These children too, however, experienced a different academic climate. Rather than self-contained classes of the prior year, they encountered a newly developed learning center where groups of children rotated every 30 minutes among three teachers, each respectively accountable for perceptual-motor, reading, and language skills. In this unique program, areas of disability differentiated during the first year were attacked along three dimensions of instruction. A third teacher, who had had two years of experience in special class, joined the two original teachers.

In Community D, all 10 children stayed in the same school --five with the original teacher, the other five transferring to a more advanced special class. Again, the teacher of the second group of children was new to the study but had had considerable experience.

In summary, across the total sample, six children were not re-evaluated and did not participate in the remediation program as a consequence of exclusion or transfers which prevented follow-up. A total 30 children experienced either new teachers or unfamiliar school settings. Moreover, nine special class and one remedial reading teacher were involved in the study during the second year. Six of these teachers had not been in the project prior to this time.

In conclusion, it is clear that at the commencement of the study there was no feasible way in which changes accurately could have been predicted. Certainly, in any school setting transfers are prone to occur. Yet, after scrutiny of the large number of children who were moved at the end of the first year, it is difficult to judge that change was not excessive beyond conceivable expectations. The influence which the study brought to bear upon selected settings throughout the two years also is not easy to determine. In a few instances, changes in placement were the direct result of diagnostic evaluations. Although the writer had hoped initially that the sample would remain stable to some extent, she too realized that to exercise such control over the destinies of children and teachers is not justifiable. Most assuredly, these modifications have introduced a substantial bias into the results of the study. While some of these will become more evident after further analysis of the data, others will go unverified. In either case, they are unavoidably a part of field research.

Procedures of Evaluation

Initial Selection of Clinical Tests and Observational Instruments

Throughout the diagnostic phase of the study, assessments of children involved procedures which were concerned with evaluations of both intellectual and affective behaviors of children. In general, these evaluations included: (a) the administration of a battery of seven diagnostic tests, and (b) the use of two instruments for classroom observation. Over the first year, the writer was solely responsible for the collection of these data.

Diagnostic and clinical tests. From September 1968 to June 1969, seven tests were administered to the sample of 48 children. Of the tests initially selected, particular subtests were designated for administration. Of those administered, certain subtests were included in the schema of learning profiles. These selections were made in light of certain intellectual functions and processes which were of interest in the original plan for evaluation. Though extensive, they constitute a limited measure of intellectual performance.

The following presentation is not indicative of a sequence in which the tests were administered. During the writer's visitations, children were evaluated whenever they were available from classroom activities. In general, depending upon the child, single periods of testing time were variable and extended from 15-minute to hour-long sessions. It was not without importance that throughout these testing sessions the writer was consistently impressed with the willingness of most children to participate in project activities. The extent to which these attitudes have altered performance remains largely indeterminable. However, the writer firmly believes that the climate of the testing situation comprises one of the most vital aspects of clinical assessment and does have a potential for changing intellectual behaviors.

The following tests were included in the initial battery:

1. The experimental version of the Illinois Test of Psycholinguistic Abilities (McCarthy & Kirk, 1961) is a test of selected aspects of language abilities of children ranging in chronological age between two and nine years. The original intent of its development was the devisal of an instrument for evaluation of specific abilities and disabilities of children suspected of or known to have language impairments. Although, basically, these subtests were conceived as appropriate for children younger than some of those in the study, its applicability to the majority of children outweighed this age factor. Furthermore, of those children whose chronological ages exceeded the range specified for the test, it was difficult to determine, prior to evaluation, whether or not they, too, might have trouble with some tasks.

The test includes nine subtests which assess aspects of language reception, expression, and association. While all nine of the subtests were administered, only seven, which later were judged to have counterparts of similar functions in other tests, were part of the analysis of the learning profiles. These seven were:

(a) Subtest 1. Auditory decoding assesses comprehension of spoken language. This comprehension is evaluated by "yes-no" responses to questions posed by the examiner.

(b) Subtest 2. Visual decoding assesses comprehension of visual stimuli--i.e., identification on the basis of various dimensions of meaningful functions. This task requires that the child select, from among a set of pictures, the one which is most similar in meaning to a picture previously exposed.

(c) Subtest 3. Auditory-vocal association requires an ability to relate spoken words in a meaningful way, and this process is evaluated here with an analogies test.

(d) Subtest 4. Visual-motor association requires an association or relating of meaningful visual symbols. Here, the child selects, from among a set of pictures, one which relates most meaningfully to a stimulus picture that is simultaneously presented.

(e) Subtest 5. Vocal encoding requires a child's verbal expression or description of class names, properties, and various functions of objects such as a ball, a block, or a piece of celluloid.

(f) Subtest 8. Auditory-vocal sequential is an auditory memory task which involves a child's vocal recall of digits previously heard.

(g) Subtest 9. Visual-motor sequential is a visual memory task which requires a recall and ordering of pictures and printed geometric figures presented, in sequence, to a child.

2. The Detroit Tests of Learning Aptitude (Baker & Leland, 1967) constitute a diagnostic instrument which contains a wide variety of measures for evaluation of intellectual functions and processes. This test embraces a range of tasks considered appropriate for children between three and at least 14 years of age. Of the 19 subtests, five of the battery were administered to children and included in the learning profiles.

(a) Subtest 6. Auditory attention span for unrelated words is an auditory discrimination and memory task which consists of a vocal recall of words previously heard in sequence. These presentations are also arranged in an increasingly difficult order. The scoring of this particular subtest allows for not only a simple count of words recalled, but a weighting of those words recalled from longer sequences.

(b) Subtest 9. Visual attention span for objects is a test of visual discrimination and memory for pictured objects in series which become increasingly more complex toward more advanced levels. This subtest, like Subtest 6, allows for a differential weighting of objects recalled, as well as a simple score.

(c) Subtest 13. Auditory attention span for related syllables is an auditory discrimination and memory test for recall of sentences previously heard.

(d) Subtest 16. Visual attention span for letters necessitates a recall of letter series that are presented on a timed basis. Although the instructions for administration require a verbal response from the examinee, if children were able to trace kinesthetically or to write sequences observed, they were given credit. Also, since the test was viewed by the writer primarily as a measure of visual memory, reversals or inversions of letters correctly placed were given credit.

(e) Subtest 17. Disarranged pictures requires an ability to revisualize and to integrate segments of outline pictures. The central intent of this subtest was considered to be an association and integration of visually presented stimuli.

Instructions for administration of the subtest specified that, in order to represent placements of picture segments, children were to write numbers in provided spaces blocked in test booklets. However, it was soon apparent that some children recognized correct organizations but became confused in their transfer of responses. Thus, if they were able to demonstrate, either by verbalization or gesture, comprehension of total arrangements, their responses were given credit.

3. The Bender Visual Motor Gestalt Test (Bender, 1938) is an instrument which consists of nine cards of designs of varying complexity. For several years, it has been used as a clinical tool for evaluations of maturational processes, disturbances of visuo-motor processes, and psychopathologies of both children and adults. Although norms for the test are not clearly outlined, in this study the instrument was found to be especially helpful in an assessment of visuo-motor and visual memory processes.

During administration, each of the nine cards was given two presentations in sequence--the first, a reproduction by visual memory; the second, a reproduction by copying. Latencies for each of the presentations were recorded. Rather than a total organization of the entire series, each of the designs was reproduced on a separate sheet of paper.

At one point during the course of test completion, the aforementioned administration procedures raised some doubts. More specifically, the thought was entertained that perhaps two presentations of identical stimuli, intended to measure different visual functions, might confound evaluations. Although to some extent this result may have obtained, upon completion, patterns of difference across the sample were revealed.

Clawson's (1962) development of a scoring system facilitated a detailed analysis of these test results.

4. Developmental Test of Visual Perception (Frostig, Lefever, & Whittlesey, 1966) originally was developed to measure five aspects of visual perception functions. It is considered appropriate for children from three to nine years of age. Like the decision to administer the Illinois Test of Psycholinguistic Abilities, advantages in using the test seemed to outweigh the inappropriateness of an age factor. Moreover, in light of performance as evaluated by certain aspects of the Stanford-Binet and the Bender Gestalt, this instrument was important to an assessment of similar visuo-motor, as differentiated from visual memory, functions.

Of the five subtests, four were administered and included in the learning profiles:

(a) Test II. Figure-ground discrimination involves a task which requires a differentiation of intersecting or hidden geometric figures from increasingly complex backgrounds. In order to complete the task, children are requested to trace designated figures previously observed.

(b) Test III. Constancy of shape is concerned with a discrimination of certain geometric figures presented in a variety of sizes, shadings, textures, and positions in space. Here, children are requested to differentiate, from other geometric figures, and to outline all circles and squares perceived.

(c) Test IV. Position in space is a test which requires a selection of one drawing, from among several identical but reversed or rotated outline figures, which matches a stimulus figure.

(d) Test V. Spatial relationships requires that children, using dots as guide points, copy certain designs presented simultaneously with a response form. This task relies heavily on not only visual analytic and integrative functions, but also motoric skills. In fact, motoric components of response in each of the aforementioned subtests of the Frostig are predominant.

5. The third revision of the Stanford-Binet Intelligence Scale, Form L-M (Terman & Merrill, 1960) was administered to all children in the sample for three purposes: (a) to determine general levels of intellectual performance; (b) to determine mental age levels of children, and (c) to compile profiles or patterns of performance across tasks passed or failed. In relation to this last point, it is well recognized that items on a general test of intelligence do not assess "pure" functions. On the other hand, it was anticipated that items, similar in format to those of other

tests included to tap certain specific intellectual functions, might reflect, too, areas of disability where children were especially deficient. Furthermore, certain items, e.g., "verbal absurdities," might be used to confirm or to reject lowered performance on other subtests, from observation considered to be quite unreliable; e.g., Auditory decoding of the Illinois Test of Psycholinguistic Abilities. Again, since a prime focus of the study remained that of diagnosis, analysis of relationships and cross reference among subtests of different instruments was held to be extremely vital to the complex differentiation process.

Three scores were compiled from performances of children on the Stanford-Binet. These were: (a) conceptual-language functions; (b) visuo-motor functions; and (c) auditory memory functions (see Appendix A for specific item inclusion).

6. Murphy-Durrell Reading Readiness Analysis (Murphy & Durrell, 1965) evalutes skills considered basic to later reading development. Though quite elementary for most children in the sample, the test did allow for an evaluation of prereading skills of some children who were unable to accomplish more difficult achievement tasks of the Durrell Analysis of Reading Difficulty.

Achievement, as defined on the Murphy-Durrell, taps functions that, again, are not single in requirement. The format of the test is structured in such a way that accomplishment of principal tasks includes assumptions of many underlying functions; e.g., visual discrimination of positions in space, memory for directions, memory for sounds presented. This issue is further relevant to school instruction of early "readiness" activities where children may be unable to cope with integrations of such refined skills.

The test consists of three sections, two of which were administered and included in the learning profiles:

(a) Parts I and II. Letter names test involves an identification of capital and lower-case letters. This test was conceived as one possibility for revealing and confirming visual rotation and reversal difficulties of some children.

(b) Parts I and II. Phonemes test consists of a task for identification of letter sounds in initial and final positions in words. For children having considerable difficulty with auditory discrimination and memory functions, the section provided a lower-level counterpart to other measures of language receptive abilities. Separate scores were recorded in learning profiles for discriminations of sounds in initial and final positions, which are not equivalent in their levels of difficulty.

7. Poor achievement of children placed in special classes often centers on their inabilities to cope with reading tasks. As it related to underlying specific learning disabilities, this area

was a major concern in the study. The Durrell Analysis of Reading Difficulty (Durrell, 1965) was conceived as a diagnostic instrument to be used in evaluations of a wide range of skills required for reading achievement of children in elementary school grades. It covers such areas of achievement as general performance of oral and silent reading, listening comprehension, visual memory, auditory discrimination and memory for sounds, identification of letter names, and recognition and analysis of words. Although norms for the battery, as conceived by this writer, are highly inadequate in terms of their possibilities for interpretation in a diagnostic process, it appeared that the various tasks did hold a great deal of promise for obtaining information closely associated with certain intellectual functions, as well as for an analysis of the relationship between these functions and more general levels of reading achievement. For this reason, the test was selected, but adaptations of administration and scoring were extensively applied in relation to almost all subtests included in the learning profiles.

The following subtests of the battery were given:

(a) Oral reading consists of short paragraphs of varying difficulty which are read and later checked for memory of details. Revisions of scoring included the establishment of ceilings of performance at either eight technical errors in oral presentation, or at least three errors in recall of story details. In the learning profiles, scores were recorded and ranked on the basis of a total accumulation of points between basal and ceiling levels.

(b) Silent reading, like the Oral reading test, consists of short paragraphs of varying difficulty. They are read, then recalled in detail, without, or if necessary, with assistance. This subtest was scored in the following way: Ceilings were set at a minimum of six errors on recall of details, totaled from both trials; and final scores recorded were derived from points accumulated between basal and ceiling levels. Two points were awarded for details recalled without aid, one point for recall with assistance.

(c) Listening comprehension involves a task wherein children listen to various paragraphs read by an examiner, later to answer questions in recall of details. It is similar in format to items on the Stanford-Binet for "memory of stories." If children obtained three or more errors, testing was not continued.

(d) Visual memory, primary level, consists of a task in which letters or words, tachistoscopically presented, subsequently are identified by children and circled in record booklets. Total scores were identical with total correct responses.

(e) Visual memory, intermediate level, with adaptations, appeared to hold much potential for revealing "how" children revisualized, remembered, and reproduced configurations of words tachistoscopically presented. If possible, the entire test was administered to each child. This procedure was followed in light of expectations that the task would allow for considerable variability of performance across the sample. The test was scored for: total words correct; total letters correctly identified in any order; total letters correctly identified in sequence; and intrusion (i.e., letters added to words).

(f) Hearing sounds in words, primary level, was similar to, but more advanced in level than, the Phonemes test of the Murphy-Durrell. It contains one additional aspect beyond the "readiness" test; i.e., the discrimination of sounds in medial positions.

(g) Phonic spelling of words, auditory discrimination of sounds on an intermediate level, involved writing from dictation all sounds differentiated in each of 15 words. If feasible, this test, too, was given to all children. It was scored for: total words correct; total consonants correctly identified; total vowels correctly identified; total sounds correctly sequenced; and intrusion (i.e., sounds added to words).

In addition to the aforementioned subtests administered from this lengthy battery, three other sections were given to children. These included the Word recognition test, scored only for total words correctly identified from tachistoscopic presentation; the Identification of letters by name test; and the memory for Sounds of letters test (i.e., blends).

In summary, this section has been concerned primarily with: (a) a presentation of diagnostic tests and subtests administered to children and included in learning profiles; (L) brief statements of rationale for selections; and (c) comments on departures from standardized procedures of administration. A total of seven tests was administered during the diagnostic phase of the study. With the exception of the Stanford-Binet, all instruments were included in evaluations at the commencement of the second year. The complete battery was administered again in May and June of 1970.

The previous exposition on clinical tests has been lengthy. In time, these evaluations were equally demanding. At a minimum in estimation, assessments of children extended far beyond initial projections to approximately 300 hours, per testing phase. Putting it conservatively, the study, in terms of its demands and efforts required for its progression, was so all-encompassing that it ran a large risk of remaining uncompleted. In fact, since onset, unmanageability was a major weakness which, at times, placed limitations upon and impaired the quality of the research. These remarks are in preface to the succeeding section, a discussion of observational procedures, which later were subject to substantial modification.

Two instruments for classroom observation. As stated earlier at several points of discussion, the writer conceived that evaluations of children should include analyses of both intellectual performance and affective behaviors. In accordance with this point of view and toward an accomplishment of this objective, two observational instruments were selected. In general, the purposes of the instruments were directed toward a recording of such social and emotional behaviors of children in academic settings as, their responses to academic tasks, styles of participation in activities, types of responses to their peers and teachers. These reactions were considered to be indicators of underlying patterns of approach toward and attitudes about learning, or at least, current tasks. It was planned that these profiles of response would be analyzed later in terms of several variables, such as degrees of severity of impairments, the pervasiveness of intellectual impairments, characteristics of disabilities, and types of teacher responses. In so doing, some correlations between affective and intellectual realms of functioning might be established. In making this statement, there is a need for some qualification. Specifically, after a perusal of several studies concerned with classroom observation, the writer did not find that this assumption was widely supported or explored in the literature. However, this paucity of information may be, to a large extent, a reflection of the numerous difficulties that arise with an employment of these procedures.

During the first year plans were formulated in relation to these schedules for observation.

1. A Category Scale for Time Sampling of Individual Child Classroom Behavior (Garfunkel, 1967) classifies child and teacher behaviors along seven scales. These include:

(a) Sequence of behavior (e.g., beginning or end of task);

(b) Control of behavior (e.g., child directed, teacher directed);

(c) Participation of child in activity (e.g., rejection);

(d) Behavior of child (e.g., passive, compliant);

(e) Teacher style of approaching, directing, and responding to child (e.g., punitive, encouraging);

(f) Direction of attention (e.g., child to child);

(g) Direction of verbal communication (e.g., child to child).

Recordings of responses in the behavioral categories were made every 30 seconds, over 10-minute periods of class activity. Moreover, the procedure was to follow that 15 observations per child, respectively, across the first and second years of the study would be made. These observations were to ensue during three different types of activity; i.e., reading sessions, independent activity periods, and less structured periods such as art.

In order to aid in the establishment of the writer's reliability as an observer and to help clarify conceptions of loosely defined categories of behavior contained in this schedule, one graduate student from the Boston University Department of Special Education spent approximately 15 hours observing in collaboration with the writer. This coefficient of reliability is not reported here since these procedures, at a later point in the study, were discontinued.

In addition to the aforementioned schedule which was used to record direct observation in classes, a second system involving tape recordings was selected.

2. A Category System for Analysis of Verbal Behavior (a modification of Amidon & Hunter, 1966; Bales, 1951) examined verbal behavior according to two dimensions; i.e., the direction of child responses, and the type of child responses. Entries in the schedule were to be made on a basis of classifications of taped reading sessions. Further, these recordings were to extend over 15-minute periods of interaction between individual children and their teachers, during group or individual instruction. In total, these observations were to include 15 recordings per child over the first and, later, the second years.

In terms of the feasibility of pursuing procedures of the two schedules, however, it was soon evident that completion would not be possible. In particular, during both the first and second years, an accomplishment of these procedures was limited in two ways: by classroom activities and by the enormity of the task of analysis for the writer.

Alterations of Initial Observation Procedures

In regard to the first year of the study, attempts at regular, manageable classroom observations frequently were thwarted. Scheduled reading sessions often were not taught. If observations, either direct or taped, appeared to be disturbing to teachers or children, they were not pursued on those particular days. Also, anticipated total-hour sessions of reading often had to be extended to one and one-half and two hours of taping time in order to include all children. Meanwhile, in some classes, certain children never were given instruction and seldom received response from teachers other than occasional threats. Furthermore, the confusion in some classes prevented a consistent item analysis of certain tapes.

As a result of these persistently occurring problems, direct classroom observations obtained the first year were unevenly distributed across the sample of children. Also, although 81 of the original 90 tapes, planned the first year, were made, it became increasingly apparent that analysis of this large number of recordings would not be feasible with the other demands of the study.

In spite of the pervasiveness of difficulties of the first year, events of the second year posed a variation of these complications. Implementation of the remediation program created discomfort for most teachers to a degree where extensive behavior observations and taping were not advisable. Thus, during the first four months of the second year, only those observations directly associated with the development of prescriptive strategies and classroom reorganizations were made.

As stated earlier, at the commencement of the study observational procedures were designed to record selected aspects of classroom behaviors that were conceived to reflect patterns of learning in young children. On the other hand, from the writer's experience of both years, this intent was far removed and confounded by other factors. General observations revealed that, universally across all classes, children experienced repeated failures. Yet, these frustrations and failures appeared to have had little to do with particular characteristics of specific learning disabilities. Moreover, rather than a detailed analysis of verbal responses, discussion of these underlying issues may have a greater bearing on this central question: Why are the children having difficulty learning?

As a consequence of these practical and theoretical considerations, an alternative to the original procedures was pursued; namely, clinical descriptions of classroom processes observed over the two-year period. Discussion of both years subsequently will proceed in this report on a basis of the writer's direct classroom observations of both years, in addition to support drawn from illustrations of selected tape recordings of the first year.

The Differentiation of Specific Learning Disabilities on the Basis of Individual Learning Profiles of Children

Conceptions of specific learning disabilities spelled out in the literature have included a wide variety of explicit and implicit criteria by definition. Generally, however, they have excluded from research and clinical practices children termed "mentally retarded." Criteria outlining specific learning disabilities have been designed to differentiate and focus on a large reservoir of varient, disordered behaviors of children. Yet, they have failed to give emphasis to a more encompassing and operationally defined conception of learning disabilities which may be similarly experienced by some children who, perhaps, have associated affective and more extensive intellectual impairments. Such procedures appear to be partly founded on several notions that impaired learning processes of children called "mentally retarded" are uniform across all functions, are largely irreversible, are accountable on a basis of diffuse mental dysfunctioning, or are inherently different from learning processes of children termed "learning disabled." Put in another way, isolation of certain clinical groups appears to be centered on an assumption that the functioning of children subsumed under one label will be more similar and homogeneous than that of children situated across classificatory groups.

Pursued from this point of view, these approaches make assumptions which may not hold universally in relation to specified yet heterogeneous groups of children who do have learning disabilities. Moreover, they preclude possibilities for using a potentially valuable and substantially broad diagnostic and pedagogical model related to learning processes of children; such a model has not been developed in the field of mental retardation. Specific to this study, the strategy finally selected for differentiating learning disabilities thus departs substantially from several current positions maintained by researchers and clinicians of the fields of both mental retardation and learning disabilities. This strategy is based on compilations of three learning profiles for each child in the study. These profiles were developed from three sets of diagnostic tests.

Central to the plan and construction of the profiles was a key objective; i.e., to allow for a differentiation of disabilities among children whose learning patterns and processes were expected to be extremely heterogeneous. For this reason, the delineation of learning disabilities was not contingent upon any particular inference about or presumed etiology of impairment, or upon any specified degree of mental retardation. Instead, on the basis of two criteria, a designation of learning disabilities was made where certain intellectual functions were revealed to be consistently below: (a) an individual child's own mental age, and (b) with respect to other children in the study, an individual child's relative positions on a majority of other intellectual functions, as measured by certain subtests. In determining specific learning disabilities according to this strategy, the writer was advancing the hypothesis that learning disabilities are relative to the individual performances of children, and probably will vary in the extent of their responsiveness to remediation in accordance with total intellectual and affective functioning. Taken in this broad view, the conception specifically asserts that the impact of disabilities upon learning and growth in young children will be unique in relation to the dynamics and the structure of all learning processes and will depend upon multiple functions which formerly may have been influenced by or currently may be bearing upon designated learning disorders. On the basis of this study, the extent and nature of this impact and interaction, while open to speculation, will remain largely indeterminable as a result of gross evaluation instruments employed. Furthermore, in the opinion of the writer, generalizations and premature inferences drawn from samplings of behavior cloud insight and confuse rather than facilitate an understanding of learning disordered processes of young children.

In general, the functions of the learning profiles were twofold in purpose: (a) during the diagnostic phase and beginning of the second year of the study, they were used to determine specific disabilities and, therefore, facilitated a development of the remediation program; and (b) they were used to evaluate change of intellectual functions of children the second year. Thus, in the rationale for and construction of the profiles, provisions for observations of change were made. Unavoidably, however, there were certain limitations to this technique. More specifically, in constructing any profile of learning, a researcher loses the dynamics of process and is left to draw conclusions about certain behaviors in terms of his own limited frame of reference in viewing a child's accomplishment of particular tasks. Such inferences, restricted by greater or lesser degrees of bias, may or may not be accurate descriptions or accounts of particular behavioral events.

Moreover, if a primary intent in determining learning disabilities is the generation of subsequent remediation and educational programs for children, one necessarily assumes a similarity between behaviors sampled on diagnostic tests and in recorded classroom observations, on the one hand, and the functioning of ongoing processes of learning in a classroom, on the other. Again, observations of behaviors in an intimate clinical situation are not always or necessarily congruent with interactions of particular children in their academic environments. However, the profiles were based on an underlying assumption that performance in both settings was similar to a degree that diagnostic information could be used as a source for making recommendations to enhance learning. Differences between learning profiles compiled prior to and those developed following the remediation program bear directly on the validity of this assumption and the feasibility of its investigation.

Regarding more specific purposes, the learning profiles provided a basis for a general analysis of current intellectual functioning of individual children. With a variety of subtest and total scores designated as requiring certain intellectual processes, each learning profile was constructed to reveal relationships among the relative positions of each child with respect to rank positions held by other children in the total group. Although

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somewhat gross in representation, the profiles thus allowed for several interpretations from the diagnostic data that were important to a general understanding of levels and characteristics of intellectual functions of individual children. These interpretations included:

(a) evaluations of the relative positions over a fairly extensive sampling of individual child performances, and assessments of the extent of correspondence between those rankings (i.e., relative positions) of IQs, mental ages, and chronological ages of individual children;

(b) based on performance across particular subtests, differentiation of specific strengths of certain intellectual functions of individual children;

(c) based on performance across particular subtests, differentiations of specific weaknesses of certain intellectual functions of individual children, some of which were designated as specific learning disabilities;

(d) evaluations of abilities of individual children to cope with similar tasks of varying difficulty;

(e) evaluations of abilities of individual children to cope with different kinds of content information (e.g., verbal versus numerical);

(f) evaluations of abilities of children to cope with tasks assumed to require integrations of certain intellectual processes (e.g., the association of visually presented letters with their respective sounds). These difficulties in associating certain intellectual functions also were designated as specific learning disabilities. Consequently, to the extent that a specification of processes could be made, specific learning disabilities were qualified in either one or both of the following aspects of intellectual dysfunctioning: (a) impairment of single functions (e.g., auditory functions), and (b) impairment of an integration or association of processes (e.g., visuo-motor functions). In the event that more than one function or operation of combined processes appeared to be equally impaired (i.e., the function or operation of combined processes farthest removed from ranked positions of mental ages and the majority of other intellectual functions of individual children), the disability considered to be more fundamental in contributing to the related learning difficulty was selected for remediation. For example, simply put, if a child displayed difficulties in the discrimination of positions in space and, also, was unable to recall sequences of letters, the focus of strategies probably would be directed toward visual, rather than visual memory, functions.

Moreover, in the analyses of profiles and determinations of severest disabilities, it was important to keep in mind that profiles designated relative positions, rather than absolute values of scores, to indicate performances of individual children. More specifically, positions of ranked scores were determined not only by actual performances of individual children, but also by the spread of performance scores across the entire group and by the variation allowable within different subtests or specific dimensions of these subtests selected for inclusion in the profiles (e.g., error scores). These distortions (i.e., clustering of scores at certain positions) were partly a result of the fact that subtests and their selected aspects were not equal in length. Although somewhat misleading in the analysis, this error was overcome, to a degree, with comparisons among individual profiles and with comparisons between individual child profiles and group profiles, constructed to reflect the dispersions of ranked scores across the total group.

In actuality, the initial differentiation of learning disabilities was an extremely complex process. The selection of this approach was justified, primarily, in a major objective of developing one profile for each child, that would reveal an array of performances. The validity of such an approach would be largely determined by the extent to which clearly defined relationships later were to be revealed.

At several points throughout this chapter and other portions of the paper, references have been made to the continuing controversy in the literature on the question of homogeneous versus heterogeneous intellectual and affective functioning of "retarded" children. While such a question, alone, appears to be quite irrelevant to an understanding of behavior and development, the implications and consequences for children whose "caretakers" assume various stands on the issue may be considerable. One side of the issue is embodied in a personal contention of the writer; i.e., in the realities of many classrooms and under the predispositions of their parents, teachers, and communities at large, children termed "retarded" are viewed, treated, and taught as one homogeneous group and are expected not to change to any substantial extent. This study takes an opposing point of view which is partly reflected in the development of the learning profiles. In this light, it was anticipated that the graphic representations of the profiles would be extremely valuable tools for pointing out to teachers the differing instructional needs of their children and in helping them to build strategies to meet these individual needs. Moreover, if it were demonstrated to be possible to intervene in the lives of children in the study, sufficiently and meaningfully to effect changes that were revealed on certain tests, the learning profiles might serve as penetrating reminders that children in special classes do change and are capable of important learning.

For these reasons, in addition to clarifications of aforementioned distortions, the profiles were constructed on transparent graph sheets that readily allowed for multiple comparisons.

Relative to specific aspects of design, each of the profiles consisted of two scales and three keys that were necessary for various interpretations of diagnostic data. More specifically, each of the profiles included:

(a) a vertical scale of obtainable ranks, ranging from zero to the highest position, 42, which was determined by the total number of children remaining in the study the second year (it was this scale that served as a guide for recording and reading ranks of scores);

(b) a horizontal scale of coded (numbered) scores, which were derived from performances on individual subtests of the seven clinical tests and which were given ranked positions;

(c) a key of intellectual functions along the horizontal scale, which were individually specified for each score included in the profiles.

Specific to this third key and its interpretation were several factors. Principally, these factors concerned an understanding of discrepancies across performances of tasks requiring similar functions. In particular, various subtests tapping similar functions often require more complex, or perhaps different, processes for their accomplishment. This problem is akin to difficulties that various researchers (Guilford, 1967; Meyers & Dingman, 1966) have encountered in attempting to hold measurement of certain intellectual functions constant, as levels of difficulty are increased. The problem raises an issue pertinent to this study; namely, is a function that is measured at periodic intervals of development and by various tasks, the same, a variation of, or a completely different process in relation to the originally sampled or criterion behavior? Our yet meager understanding of the structuring and reorganization of information processes in the growth of intelligence of young children makes this a difficult question to answer definitively. From a more practical point of view, however, it places upon the clinician a responsibility for spelling out, in specific terms, the meaning of his diagnosis of various disabilities and, thereby, increasing insight into the particular ways that diagnostic and instructional tasks shape and are influenced by intellectual processes and structures. Though this study does not pretend to examine these theoretical issues directly, there was a need for close scrutiny of those tasks which were subsumed under one function or combination of processes, yet reflected discrepancies in performance. Toward this analysis, the profiles again were useful.

Table 4 presents a listing of the seven clinical tests administered, their respective subtests and corresponding dimensions selected for inclusion in the learning profiles. Each of the three profiles for individual children was based on a key of 51 scores and a rank for chronological age. Although Motor encoding and Auditory-vocal automatic subtests of the Illinois Test of Psycholinguistic Abilities were included in the profiles, they were not part of the analysis.

In part, the rationale for the selection of certain scores, pertinent to each subtest, has been presented in the discussion of evaluation instruments in this chapter. Although these discussions and the title descriptions in Table 4 do not self-explain reasons for score inclusion in the profiles, in general, they do reflect the nature of dimensions selected. At this point, a more detailed explanation of these selections extends beyond a feasibility of presentation. In Chapters IV, V, and VI on the presentation and analysis of data, the purposes of these scores and evaluations of their effectiveness in differentiating variabilities of intellectual functions of individual children will be considered more directly.

In conclusion, after reviewing an explanation of the rationale and objectives for, the nature of, and interpretations to be derived from the learning profiles, the reader still may feel a degree of vagueness about the specific steps and analyses attending

TABLE 4

A LISTING OF SEVEN CLINICAL TESTS, THEIR RESPECTIVE SUBTESTS, AND SELECTED DIMENSIONS INCLUDED IN THE LEARNING PROFILES

Clinical Tests	Derivation of Scores for Profiles			
	Subtests and Test Scores	Additional Dimensions of Subtests Included	Code of Scores	Code of Functions[a]
Stanford-Binet	IQ		2[b]	
	Mental Age		3	
Illinois Test of Psycho-linguistic Abilities	Auditory decoding		4	A, L
	Visual decoding		5	V, L
	Auditory-vocal association		6	A, L, C
	Visual-motor association		7	V, L, C
	Vocal encoding		8	C, L
	Motor encoding		9	C, L
	Auditory-vocal automatic		10	A, L, M
	Auditory-vocal sequential		11	A, L, M
	Visual-motor sequential		12	V, L, M
	Total ITPA		13	
Detroit Tests of Learning Aptitude	Auditory attention span--Unrelated words	Simple score	14	A, M, L
		Weighted score	15	
	Auditory attention span--Related words		16	A, M, L
	Visual attention span--Objects	Simple score	17	V, M, L
		Weighted score	18	
	Visual attention span--Letters		19	V, M, L
	Disarranged pictures		20	V, C

(continued on next page)

TABLE 4 (continued)

Clinical Tests	Derivation of Scores for Profiles			
	Subtests and Test Scores	Additional Dimensions of Subtests Included	Code of Scores	Code of Functions[a]
Frostig Developmental Test of Visual Perception	Figure-ground discrimination		21	V, VM
	Form constancy		22	V, VM
	Position in space		23	V
	Spatial relationships		24	V, VM
Stanford-Binet	Conceptual-language functions		25	C, L
	Visuo-motor functions		26	V, VM, C
	Auditory memory functions		27	A, M
Bender Visual Motor Gestalt Test	Satisfactory gestalts	Memory	28	V, VM, M
	Simplified gestalts		29	
	Fragmented gestalts		30	
	Satisfactory gestalts	Perception[c]	31	V, VM
	Simplified gestalts		32	
	Fragmented gestalts		33	
Murphy-Durrell Reading Readiness Analysis	Names of Letters	Capital	34	V, A, M, L
		Lower-case	35	
	Phonemes	Initial position	36	A, L
		Final position	37	
		Total	38	

(continued on next page)

TABLE 4 (continued)

Clinical Tests	Derivation of Scores for Profiles			
	Subtests and Test Scores	Additional Dimensions of Subtests Included	Code of Scores	Code of Functions[a]
Durrell Analysis of Reading Difficulty	Names of letters	Capital	39	A, V, M, L
		Lower-case	40	
	Sounds of blends		41	A, M, L
	Primary visual memory		42	V, M
	Intermediate visual memory	Total letters	43	V, M, VM
		Letters in sequence	44	
		Intrusion	45	
	Primary hearing sounds		46	A, M
	Intermediate hearing sounds	Total consonants	47	A, M, VM
		Total vowels	48	
		Sounds in sequence	49	
		Intrusion	50	
	Word recognition		51	V, A, M, C, L
	Oral reading recall		52	V, A, M, C, L
	Silent reading recall		53	V, A, M, C, L
	Listening comprehension recall		54	A, M, C, L

[a] Capital letters A, V, VM, M, L, and C respectively designate these intellectual functions: Auditory, Visual, Visuo-Motor, Memory, Language, and Conceptual.

[b] Chronological age was the first variable ranked on learning profiles. IQ was the second.

[c] Presentations labeled "perception" involved copying designs from cards.

the diagnoses of disabilities of children. In essence, however, the most primary objective of the learning profiles was the formulation of a flexible framework that could be used to establish relative criteria for disabilities which were defined in terms of educational needs revealed in the performances of children. Thus, a more specific statement of procedures and criteria is neither possible nor desirable.

In their various interpretations of diagnostic data, researchers and clinicians invariably will err in their speculations about the assets and liabilities of mental functions of children entrusted to their care. Whether in the name of science, philosophy, psychology, education, or simply humanity, it does seem that more positive benefits will be accrued if these errors are made in a more positive and tempered vein so as to assist children in, not exclude them from, our educational programs. Such interpretations need not distort the realities of different potentials among children. However, they give to education its rightful place in helping children to develop and to learn in ways that are unique and responsive to their own individual styles of living.

The Stanford-Binet Profiles of Children

In addition to the learning profiles, another instrument was conceived as useful to the diagnostic process. This was a second profile of performances, based on the Stanford-Binet Intelligence

Scale and modeled on a performance profile developed by Valett (1965). Based on individual performances of children rather than ranked data, these profiles were organized in a framework similar to that of the learning profiles. Certain items, many of which were quite similar to those appearing in other subtests, were designated as requiring particular or combined functions. As in the learning profiles, intellectual processes specified for different tasks included: auditory, visual, visuo-motor, mnemonic, language, and conceptual functions. Here, too, single items or tasks appeared in more than one area of intellectual functioning. For example, "memory-for-designs" on the Stanford-Binet involved visual, visuo-motor, mnemonic, and perhaps conceptual functions (although this last function was not designated in the profile for this particular task). With this schema, general trends, which is all that the profiles could reflect, were disclosed and compared with levels and characteristics of intellectual functions represented in the learning profiles.

The specification of relative positions of mental and chronological ages allowed for general determinations of those intellectual tasks where children were functioning (a) substantially below, (b) moderately below, (c) on a level similar to, (d) moderately above, or (e) extremely above these two positions designated on each individual child's profile. More specifically, in relation to mental and chronological ages, positions of various tasks of interest were indicated by two sets of numbers ranging from one to five, distributing above and below mental and chronological ages and corresponding with the ratings above. A sample of the profile appears in Appendix B of this paper.

Procedures of Intervention:
The Remediation Program

Major emphasis in this section will be given to theoretical conceptions underlying the remediation program. While applications of these theoretical conceptions in individual class settings will be evaluated during the presentation and analysis of data, considerations here will include many thoughts which have evolved during the course of program implementation. In this sense, implementation of the remediation program thus helped to shape and clarify theoretical conceptions of educational practices, specifically in relation to classes of children in the study and, more broadly conceived, in relation potentially to other learning situations.

In general, a fundamental issue underlying all theoretical conceptions of the remediation program was concerned with this question: How do processes of education meet intellectual and developmental needs of children who have learning difficulties? Allowing for variation of format in specific settings, the writer's attempts to respond to this question through the development of a framework of the remediation program were concerned primarily with two theoretical issues: (a) conceptions of the development of certain intellectual functions that constitute important learnings and growth in children, which could provide a major focus for the remediation program; and (b) conceptions of those conditions which could initiate and support development of intellectual functions. While response to the first issue was related to a formulation of theoretical objectives of the remediation program, response to the second constituted a basis for specific recommendations for structuring educational practices with children. Together with another consideration for strategies for incrementing change in teachers who were responsible for program implementation, these three major aspects of underlying theory thus comprised the framework of the remediation program. In the following presentation, the focus of discussion will be centered on these three aspects of the theoretical framework of the program.

Theoretical Objectives of the Remediation Program

In a broad sense, theoretical objectives of the remediation program were directed toward one central effort: to initiate, assist, and shape meaningful learning and growth in children. This central objective includes at least two assumptions: (a) there is a universal direction underlying meaningful learning and growth in the development of mental processes of children; and (b) certain regularities and characteristics of mental functioning, revealed in the evolution of intellectual processes of children, are basic to this universal direction of learning and growth.

Major emphasis in recent contributions to the literature on child development (Bruner, 1963, 1966; Bruner, Olver, Greenfield, et al., 1967; Hunt, 1961; Piaget, 1968; Inhelder & Piaget, 1964) and psychoanalytic ego psychology (Erikson, 1950, 1959; Freud, 1936; Gill, 1967; Hartmann, 1939, 1964; Rapaport, 1960) has been devoted to attempts to shed light on postulated universal trends and characteristics of mental functioning from infancy to childhood and adolescence. While varying in their more specific aspects of concentration, these theories generally have directed the focus of their investigations and interests toward understanding developing mental processes which facilitate an acquisition of increasingly complex stimuli, rather than toward evaluations of content acquisitions per se. In taking this point of view, these researchers and theorists have been concerned directly with discerning the developing abilities of children "to cope" (Bruner, 1966) with a variety of learning situations. This point of view has implications for a development of educational practices with children and, in particular here, for children who have learning disabilities.

In varied and numerous ways, children who have learning disabilities are unable to cope with certain learning situations. From their various environmental encounters, they have been or are unable to develop in ways that are considered appropriate for their peers. In the opinion of the writer, these difficulties in coping do not reflect that children who have learning problems are inherently different from children who learn "normally." In "normal" children, there is growing evidence of considerable variation in their means of obtaining certain learning objectives. Likewise, with learning disabled children, variation does not negate the general schema or tendency toward which meaningful learning and growth in children is directed. Instead, one might speculate that, for some partly specified yet largely unknown reasons, courses of learning have been altered. In essence, labels such as "mental retardation," "emotional disturbance," or "brain injury" serve to point out this fact. However, they are misleading and erroneous when taken further to infer the presence of learning patterns which are hypothesized as unique to certain "clinical entities" rather than included in the total spectrum of learning patterns that vary across all developing children.

In isolating certain groups of children from the main course of development which is posited for "normal" children, researchers provide little or no theoretical foundation for educators and clinicians to build their respective therapeutic programs. The present study held another point of view. Specifically, despite certain manifestations of disordered behaviors where learning has gone awry, there still remains a general schema and universal direction which underlies learning processes of all children. This point of view by no means presumes to minimize the severity, seriousness, or uniqueness of impairments which some children experience. However, it does maintain the following position with respect to children who have learning difficulties and to the meaning of important learning: Broadly conceived, meaningful learning is characterized by a tendency toward successive adaptations and, thereby, a greater synthesis of all mental processes in coping with internal and external states of reality; this potential is relevant to children who have learning difficulties as well as children who learn "normally," all in accordance with their own diverse, coping styles.

The central objective of the remediation program. It was the above conception that subsequently formed a basis for the most central objective of the remediation program; namely, to initiate, assist, and shape selected aspects of learning and growth in children in such ways as to facilitate their coping with, adapting to, and processing of varied and increasingly complex forms of knowledge presented in their academic settings. Thus stated, this objective offers no speculation about quantitative amounts of information which children are expected to acquire. Instead, it asserts that the direction of learning, though impaired to varying degrees in relation to different children, can be altered in ways that will allow for a greater enhancement and adaptation of intellectual functioning. Moreover, this objective alludes to another important point. It is this: On the basis of a study such as the present one, it is almost impossible to determine the extent to which specific learning disabilities may or may not be "cured." On the other hand, a central contention of the study was that children can learn to circumvent and manage their learning difficulties to achieve a greater synthesis of intellectual and mental functioning. It is worth noting that this view is not inconsistent with various educational and remediation approaches developed in the field of learning disabilities. However, clinicians in this field, too, appear to be hard put in explaining the specific nature of changes in children that arise from certain remediation strategies. This problem is partly reflected in the question of whether therapeutic and educational strategies should be focused directly on specific disabilities or on related cognitive functions. As will be evident, later, in the explanation of specific remediation strategies, both approaches were used in this program. This course was pursued for two reasons: (a) as stated earlier, it was assumed that specific intellectual functions are a part of total functioning; therefore, specific learning may and, hopefully, will become integrated with other processes in the over-all schema of development and growth; and (b) it was considered important that program strategies be determined by specific needs which different children manifested and not be confined to any one philosophy of approach.

Additional objectives of the remediation program. These objectives were intended to spell out certain aspects of developing, coping abilities of children that were expected to be initiated and supported by the program strategies. Principally, these successive adaptations were concerned with a development of successive differentiations and integrations of certain intellectual functions. Drawn from current conceptions of general patterns of growth evident in a major portion of the literature on child development, based on conceptions of learning disturbances and their remediations revealed in the literature on learning disabilities, and also implicit in the clinical model presented earlier in this chapter, the following additional objectives of the program were conceived:

1. To increase abilities of children to use symbolic forms of communication (i.e., language and reading) for an expression of thoughts to other people of the immediate environment and for an interpretation of thoughts and ideas of other people of the immediate environment. Failures to acquire language and reading skills

are among principal indications that certain children are not developing particular abilities that are commensurate with those of their peers. Repeatedly, clinicians and researchers in the field of learning disabilities, involved with differentiating learning difficulties and developing respective remediation strategies, have testified to these language and reading problems and their various relationships to numerous specific learning disabilities. In view of the disclosure that many children in this study revealed similarly described language and reading difficulties, these two symbolic forms of communication and their various dimensions were selected for emphasis in this program.

2. To increase selected aspects of conceptual abilities of children; i.e., making associations and drawing relationships, classifying, drawing inferences and deductions, making judgments, and comprehending. In addition to symbolic functions, conceptualization, in its varied forms, is another intellectual activity which has received particular interest from researchers and theorists concerned with child development (Bruner, 1966; Inhelder & Piaget, 1964; Furth, 1966; Werner, 1948) and from those concerned with learning and intellectual disturbances (Goldstein & Scheerer, 1941; Luria, 1966; Myklebust, 1968; Strauss & Lehtinen, 1947). Though described from varying points of view, conceptualization as applied to a wide range of problem-solving situations

is conceived as including abilities to analyze, select essential relationships, discover and apply immediate aims and operations by which certain objectives may be attained, and generalize solutions to other appropriate situations. In view of an already extensive evaluation and remediation plan of the present study, inclusion of all dimensions of developing conceptual functions of children was not feasible. However, for several reasons, some selected aspects of these functions were considered important.

To review briefly, one central purpose of this study has been essentially concerned with differentiating and describing various disabilities of children in special classes, which may be contributing to school difficulties. Certainly, in "normal" children, developing conceptual functions are crucial to success and achievement both on school-related tasks and on standardized intelligence, language, and reading tests. This conclusion seems warranted in the following respect. In terms of successive adaptations to the external world, developing conceptual functions imply that children will become increasingly able: (a) to process information in ways that will be less dependent upon and less influenced by immediate stimulus properties, (b) to internalize a large array of rules and laws for various kinds of problem-solving, and (c) to explore problem solutions from multi-dimensional points of view. Although various academic tasks may not focus directly on these successive adaptations, failures of some children, in part, may reflect a lack of development of or difficulties in using certain characteristic processes of conceptual functions which are necessary to various solutions.

Because of the relationship of concept formation to other mental functions and because of the many different processes which appear to characterize conceptual functions, difficulties contributing to learning disabilities are not easily isolated for purposes of remediation. At the same time, however, to the extent that differentiation was possible through the diagnostic process and insofar as certain characteristics of conceptual functions were considered fundamental to developing abilities of children to process increasingly complex forms of information, selected aspects of this function were included in the major focus of the remediation program. These aspects included the following operations: making associations and drawing relationships, classifying; drawing inferences and deductions; making judgments; and comprehending.

In addition to the two objectives discussed above, the focus of the remediation program involved a third consideration.

3. To increase single or combined auditory, visual, visuomotor, and mnemonic functions which constituted specific learning disabilities and appeared to be contributing to language, reading,

and conceptual dysfunctions of individual children. Although differing in their various conceptions of intellectual dysfunctions that may impair learning abilities of children, most researchers and clinicians in the field of learning disabilities agree that more complex processes, such as language, reading, and conceptual developments, may be affected by auditory, visual, visuo-motor, and mnemonic impairments. Too, in accordance with our knowledge of child development, it seemed reasonable to assume that remediation efforts directed toward more complex processes might be of little or no benefit to some children until they learned to cope with other more basic functions where learning had gone awry. This position does not mean to imply that teaching more complex processes necessarily is discontinued, but more likely, that approaches of instruction are substantially altered in light of these problems.

Summary and conclusions. In the foregoing discussion, central and additional theoretical objectives, which comprised the first of three aspects of the theoretical framework of the remediation program, were presented. These objectives were conceived in terms of general and more specific expectations for growth and successive adaptations that were postulated to constitute important learnings for children involved in the remediation program. It should be evident that the extent to which the remediation program would move different children in these specified directions would be dependent upon many factors. Some of these have been projected already in the clinical model describing various spheres of influence bearing upon mental functions. Other, more specific factors will receive interpretation in case studies of children and their teachers.

Necessarily, interpretations in the final analysis of data will include considerations of "how far" or "how much" children in the study did change. On the other hand, it is important to recognize that the theoretical objectives and implementation of strategies of the remediation program had quite another focus; namely, to bring about change that would be meaningful to individual children. In focusing, otherwise, on projections of fixed amounts of change which, after all, were largely indeterminable, the study would have run the risk of attaching implicit values to greater or lesser amounts of knowledge acquired, rather than to the relative importance of that knowledge to individual children.

Finally, in casting objectives of the program in terms of desirable "growth patterns" instead of random "inputs" of information lacking a theoretical foundation, the writer was assuming that more mature levels of adaptive functioning would be revealed on posttest clinical evaluations and during classroom observations. Whether or not this assumption eventually obtained, the present theoretical orientation of the program was considered justified in the postulation of a broad schema of learning and growth in children which, heretofore, has been markedly absent in many interventions and educational programs with children termed "mentally retarded."

Strategies Recommended in Order to Attain Theoretical Objectives of the Remediation Program

General orientation of recommended strategies. Provisions for individual differences in learning pose difficult problems of definition and organization that are not easily resolved by either researchers or teachers. Descriptions of particular materials and certain groupings of children and specifications of program objectives are among different attempts to resolve the major issue of how one proceeds to meet varied educational needs of children. Yet, each of these factors, considered in isolation, reflects only part of a total desirable conceptualization of instruction for children. Furthermore, none of these factors, alone, is sufficient to explain "how" proposed remediation programs essentially differ from one another. The problem might be stated in this way: How does one characterize a remediation program so that teachers will have adequate guidelines for implementing certain strategies and so that other researchers and clinicians will understand what was proposed at the onset and throughout the course of the program?

This section of discussion on the remediation program will present the framework for recommendations of specific strategies employed to attain the theoretical objectives and, thus, will seek to describe the nature of plans for program implementation.

Theoretical objectives were intended to establish a major focus of the remediation program. Recommendations for specific strategies were concerned with this issue: How can objectives be carried out with individual children who have differing intellectual strengths and weaknesses? Principles embodied in a central conception of the remediation program, which will be termed "clinical teaching," formed a basis for resolution of this issue in this study and, thus, constituted a foundation for all recommendations to teachers. Moreover, these principles served to define the essence of an otherwise, seemingly fragmented remediation program for 42 different children.

Basically, principles for "clinical teaching" were designed to spell out specific essential characteristics of and conditions for teaching children who had learning difficulties. Although taking varied forms with different teachers, these guidelines were intended to specify those ways in which teachers could structure learning tasks.

Principles and selected examples of recommended strategies. Four principles served as guidelines for recommendations to teachers.

These principles included considerations germane to an organization of instructional practices, which may be classified in terms of: (a) criteria for task selection, and (b) criteria for task presentation. It was expected that without attendance to both aspects of task planning, teacher instruction would fail to be maximally beneficial to children. In the following discussion, statements, rationales, and selected examples of the four principles will be presented.

PRINCIPLE ONE. Teachers were to select tasks in accordance with intellectual strengths and weaknesses (i.e., designated learning disabilities) of individual children. These selections were expected to take into account both levels of performance across all intellectual functions and configurations of strengths and weaknesses revealed in the diagnostic evaluations. This principle was based on three assumptions:

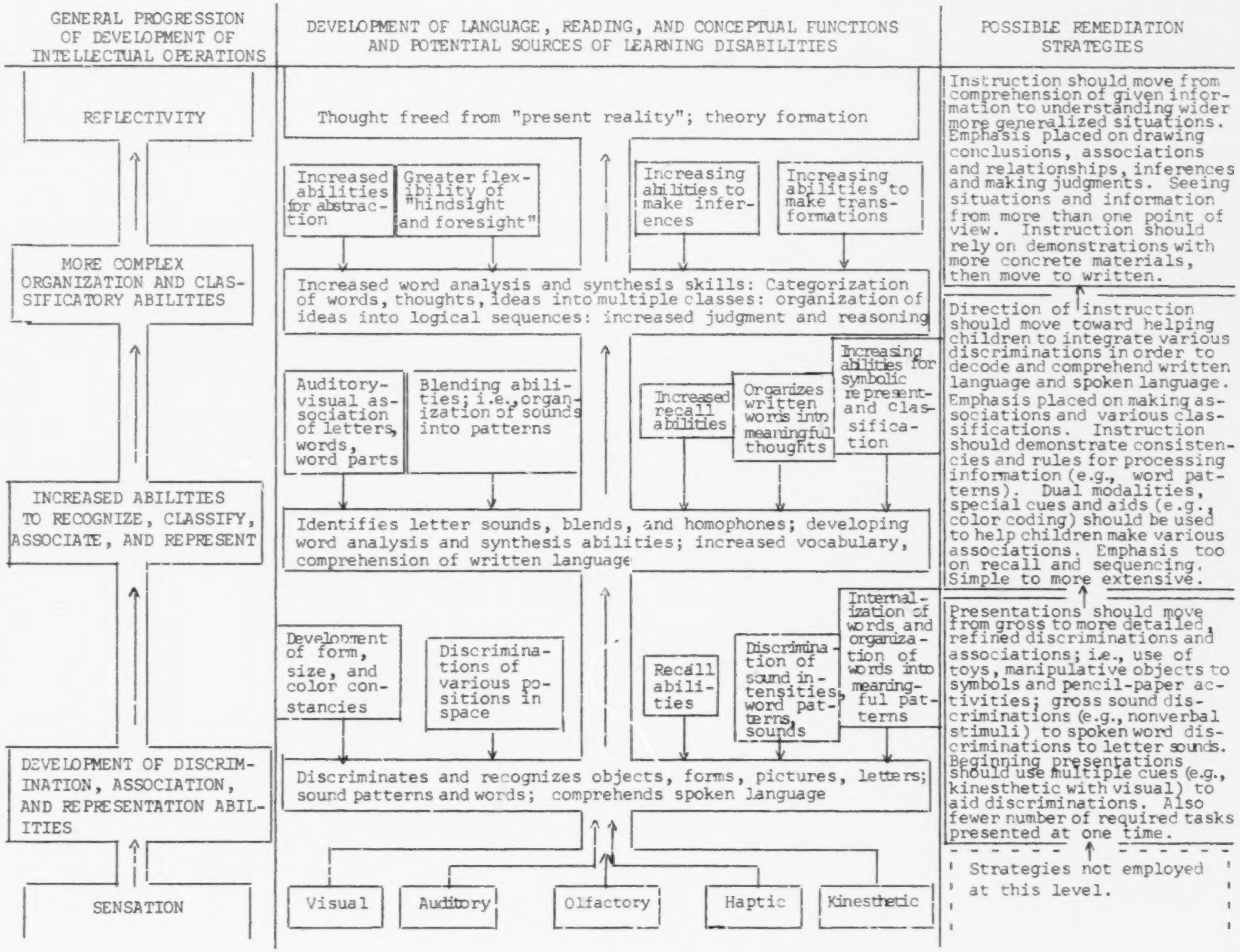
(a) that although directed toward an attainment of similar objectives (e.g., decoding written words), the specific means for accomplishing those objectives (i.e., selected tasks) would vary in accordance with the intellectual strengths and weaknesses of individual children;

(b) that the selection of tasks would vary along two dimensions; i.e., form and sequence;

(c) that both configurations and levels of intellectual functions would be important to determinations of the particular forms and sequences of tasks presented to different children.

Implicit in the third theoretical objective discussed earlier in this section, these assumptions were drawn from the following evidence on and conceptions about the development of language, reading, and conceptual functions of children. We know that language, reading, and conceptualization are such complex processes that they require development, over a period of time, of many operations, abilities, and skills for "optimal" performance. Moreover, attainment of these various operations, abilities, and skills will be dependent upon development of separate, yet related, intellectual functions, as well as certain integrations of these functions. There is continuing research that is being devoted to determinations of certain functions and their numerous associations, which may have particular bearing upon attainment of specified skills and abilities, and of the relationships of these to language, reading, and conceptual functioning in children (deHirsch, Jansky, & Langford, 1966; Doehring & Rabinovitch, 1969; Frostig & Maslow, 1969; Levi, 1965; Luria, 1966; Myklebust, 1965; Sabatino, 1968). Differences among points of view expressed by various researchers appear to arise, to a lesser extent, from disagreements with the assumption that children develop foundation abilities in preparation for more advanced accomplishments. Controversies are centered on differing positions with respect to: (a) definitions and conceptions of learning abilities (e.g., the meaning of the term "auditory perception"); (b) designations of those abilities which appear to be most closely tied to acquisitions of certain skills (e.g., the importance of auditory-visual associations in the identification of sounds of letters); and (c) remediation attempts which are applied at levels of foundation abilities assumed to be contributing to certain failures or, more directly, at specific academic skills. Each of these issues is closely related to the rationales for and procedures applied in various remediation programs. A related, important question is this: Assuming that all functions are relevant to a development of language, reading, and conceptual functions, how does one determine where to commence remediation strategies along the developmental continuum? In this study, the learning profiles and surveys of test responses of children provided two major sources for making these determinations.

Figure 2 is intended to shed light on the writer's conception of the dynamic relationship between diagnostic and intervention processes and, further, on the nature of potential learning disabilities. The model includes descriptions of: (a) an assumed general progression of intellectual operations; (b) evidence of this progression observed in language, reading, and conceptual development where disabilities may be characterized by numerous


GENERAL PROGRESSION OF DEVELOPMENT OF INTELLECTUAL OPERATIONS
DEVELOPMENT OF LANGUAGE, READING, AND CONCEPTUAL FUNCTIONS AND POTENTIAL SOURCES OF LEARNING DISABILITIES
POSSIBLE REMEDIATION STRATEGIES
REFLECTIVITY
Thought freed from "present reality"; theory formation
Increased abilities for abstraction
Greater flexibility of "hindsight and foresight"
Increasing abilities to make inferences
Increasing abilities to make transformations
MORE COMPLEX ORGANIZATION AND CLASSIFICATORY ABILITIES
Increased word analysis and synthesis skills: Categorization of words, thoughts, ideas into multiple classes: organization of ideas into logical sequences: increased judgment and reasoning
Auditory-visual association of letters, words, word parts
Blending abilities; i.e., organization of sounds into patterns
Increased recall abilities
Organizes written words into meaningful thoughts
Increasing abilities for symbolic represent- and classification
INCREASED ABILITIES TO RECOGNIZE, CLASSIFY, ASSOCIATE, AND REPRESENT
Identifies letter sounds, blends, and homophones; developing word analysis and synthesis abilities; increased vocabulary, comprehension of written language
Development of form, size, and color constancies
Discriminations of various positions in space
Recall abilities
Discrimination of sound intensities, word patterns, sounds
Internalization of words and organization of words into meaningful patterns
DEVELOPMENT OF DISCRIMINATION, ASSOCIATION, AND REPRESENTATION ABILITIES
Discriminates and recognizes objects, forms, pictures, letters; sound patterns and words; comprehends spoken language
SENSATION
Visual
Auditory
Olfactory
Haptic
Kinesthetic

Instruction should move from comprehension of given information to understanding wider more generalized situations. Emphasis placed on drawing conclusions, associations and relationships, inferences and making judgments. Seeing situations and information from more than one point of view. Instruction should rely on demonstrations with more concrete materials, then move to written.

Direction of instruction should move toward helping children to integrate various discriminations in order to decode and comprehend written language and spoken language. Emphasis placed on making associations and various classifications. Instruction should demonstrate consistencies and rules for processing information (e.g., word patterns). Dual modalities, special cues and aids (e.g., color coding) should be used to help children make various associations. Emphasis too on recall and sequencing. Simple to more extensive.

Presentations should move from gross to more detailed, refined discriminations and associations; i.e., use of toys, manipulative objects to symbols and pencil-paper activities; gross sound discriminations (e.g., nonverbal stimuli) to spoken word discriminations to letter sounds. Beginning presentations should use multiple cues (e.g., kinesthetic with visual) to aid discriminations. Also fewer number of required tasks presented at one time.

Strategies not employed at this level.

FIG. 2. A schema representing a general progression of development of intellectual operations; language, reading, and conceptual functions; and possible remediation strategies.

types of learning difficulties; and (c) the general orientation and corresponding progression of proposed remediation strategies. In addition to these primary aspects, the model also reflects some specific considerations which have implications for remediation strategies.

With respect to general trends implicit in the model, developing intellectual functions and operations are projected as moving in a direction from predominantly simple, concrete, stimulus-bound accomplishments to more complex, integrated, flexible, and multidimensional acquisitions. Remediation strategies are conceived as following a similar pattern. In terms of the mechanics of instruction, this pattern involved recommendations for three courses of action: (a) direct focus on the principle area of disability; (b) the use of alternative, stronger learning modalities and processes instead of or, more frequently, along with disabled functions; and (c) attempts to integrate specific and more basic abilities and skills into the schema of more complex acquisitions. These strategies meant specifically that, in its initial stages, instruction would include many clues as aids to problem-solving, be less demanding in task complexity, rely heavily on a use of materials requiring more gross discriminations and associations (e.g., manipulative objects), and be highly structured. Moreover, patterns of intellectual development allude to an expectation that specific learning disabilities would require a series of remediation steps beyond initial points of origin as children attempted to cope with increasingly difficult academic tasks. This anticipation stems from an assumption of interrelatedness of all designated stages and is represented in the model by open-ended boxes which indicate developing intellectual operations and functions and appropriate remediation strategies.

Some of the ways in which form and sequence of tasks may vary and reasons for these differences should be apparent. To restate a familiar point, failure of academic performance may result from disabilities originating at many levels and taking multiple forms. In the center section of the model, boxes leading into and indicating necessary components of principle stages of development serve to spell out this fact. With a specific example, hopefully, procedures for task determinations will have further meaning and clarity.

Let us assume that a teacher is involved in teaching two children of approximately nine years of age "to read"; (i.e., decode written words). The learning profile of one child is characterized, in particular, by auditory dysfunctions which are apparent in lowered performance across all tasks requiring predominantly involvement of this modality. Observations of the child during class participation corroborate this finding in that anxiety appears to increase markedly when he is required to accomplish tasks of fine auditory discrimination. Too, his teacher has noted that when there is any degree of confusion in the classroom, he has some difficulty in comprehending spoken language. Although he can recognize letters visually, he has failed to acquire letter names and sounds. Meanwhile, another child in the same class reveals quite a different profile. She has considerable difficulty with discriminations and recall of visually presented information. Although she recognizes a few letters, she is prone to constant reversals in copying letters, forms, and words. Whenever she attempts to reassemble puzzles, she becomes quickly confused and easily frustrated. Writing, also, has posed a difficult task for her.

In planning an integrated and total program for both children, it is obvious that many additional factors must be taken into consideration. However, on the basis of the brief descriptions of these exemplary learning disabilities, some important points relative to recommendations for strategies can be demonstrated.

Decoding written words involves a series of complex discriminations, associations, and conceptualizations. In "unlocking the code" of an unknown word, a child must be able to: (a) discriminate visual symbols from one another (and, therefore, he must have form and size constancy, be able to determine positions in space, be able to distinguish figures from their backgrounds); (b) discriminate sounds auditorily; (c) recall sounds; (d) associate visual symbols with corresponding sounds; (e) conceptualize and synthesize sound and visual symbols into meaningful patterns; and (f) upon comprehending the word, reauditorize it. Because the children briefly described above are failing at different points along this course toward comprehension of written words, different teaching strategies will be necessary. Table 5 presents a sample of strategies which might be appropriate for each of these children.

TABLE 5

TWO MODELS OF STRATEGIES FOR DECODING WRITTEN WORDS

Focus of Strategies	Sequence of Remediation Steps	
	for Auditory Disability	for Visual Disability
Focusing on Specific Disability	1. Gross discriminations of sound; e.g., varying intensities, sounds originating from different positions (right, left, near, far); familiar sounds; differentiation of principle sounds from background confusions. 2. Discriminations of single consonant sounds and letter names which appear to be more clearly distinguishable (e.g., "t" and "r"), both in isolation and in context of words. 3. Discrimination of consonant sounds which more closely resemble one	1. Gross discriminations involving determinations of positions in space, figures from background, and form constancy; e.g., matching of identical forms of varying complexity; matching of forms of varying patterns, textures, and position determining varying positions (up, down, right, left, under, over) by using manipulative forms or objects. 2. Discriminations of similarities and differences of forms and designs in pencil-paper activities.

(continued on next page)

TABLE 5 (continued)

Focus of Strategies	Sequence of Remediation Steps	
	for Auditory Disability	for Visual Disability
	another (e.g., "f" and "v") and those which have more than one sound component (e.g., "g"), both in isolation and in context of words. 4. Discrimination of sounds in varying positions; i.e., initial, final, medial. 5. Discrimination of vowel sounds, long vowels, first, which are closer to letter names and which are more easily distinguishable. These discriminations should be made both in isolation and in context of words. 6. Discriminations of short vowels.	3. Discriminations of letters which are more easily distinguished visually (e.g., "s" and "k"). 4. Finer discriminations of letters (e.g., "m" and "n"; "b," "d"). 5. Increased speed of perception of letters, in isolation and in context of words.
Associating Disabled Functions with Stronger Modalities	Teaching sounds in association with visual clues; e.g., color coding of letters which have different sounds; pairing of visual cues (colored blocks) to indicate different sounds; presentation of auditory stimuli with visual stimuli in sound discrimination (auditory-visual association of letters and sounds using Language Master).	Teaching visual discrimination of letters and words in association with kinesthetic clues; e.g., writing in space, sandpaper letters, writing freely on board; walking through various directions and positions.

(concluded on next page)

TABLE 5 (concluded)

Focus of Strategies	Sequence of Remediation Steps	
	for Auditory Disability	for Visual Disability
Integrating Specific Learning into Total Schema for More Complex Acquisitions	Integrate auditory discriminations with: 1. Blending of sounds 2. Sequencing of sounds 3. Memory for sounds	Integrate visual discriminations with: 1. Visual sequencing of letters and words 2. Memory for letters and words presented visually

Thus far, discussion has been concerned with recommendations for strategies which were based on diagnostic evaluations of clinical tests. There was, also, a second important consideration which influenced determinations of particular strategies and this comprised the second principle for instruction.

PRINCIPLE TWO. Teachers were to structure tasks in accordance with observations of classroom behaviors of children which appeared to be relevant to individual styles of learning. In some instances, these considerations would imply the use of different materials, modifications of particular sequences of activities, or changes in the seating positions of certain children. After substantial observation of classes in the study, it appeared that behavioral characteristics of certain children interfered with their participations in academic activities. These disturbances were:

(a) excessive distractibility appearing to arise from the use of certain materials or the presence of other children;

(b) excessive distractibility appearing to arise from low levels of tolerance when focusing directly on areas of disability;

(c) excessive anxiety observed prior to the commencement of instruction.

In light of these manifestations, it seemed reasonable to assume that some children would require additional or perhaps different approaches to tasks, not all of which were necessarily warranted for their peers with similar disabilities. Instructional strategies thus included three types of modifications that were equally applicable across all learning disabilities; i.e., modifications of types of materials, altered sequences of tasks, and changes in placements of children during independent or teacher-directed activities. Tables 6 and 7 provide a few examples of manifestations of behavioral disturbances associated with representative auditory and visual learning disabilities and corresponding recommendations for modifications of instruction.

Determinations of the extent to which modifications would be necessary in relation to different children were based directly on class observations. In particular, attention was focused on the degree to which teachers appeared to experience difficulties with certan children and the particular precipitating factors.

TABLE 6

EXAMPLES OF BEHAVIORAL DISTURBANCES ASSOCIATED WITH AUDITORY LEARNING DISABILITIES AND RESPECTIVE MODIFICATIONS OF TEACHING STRATEGIES

Behavioral Disturbances Associated with Auditory Disability	Modifications of Teaching Strategies		
	Type of Materials	Sequence of Tasks	Placement of Child in Class
1. Child is unusually distracted by conversations and noise of other children in class. 2. Child withdraws from or refuses to participate in activities which require predominant involvement of auditory modality. 3. Child becomes excessively upset if he feels that instruction is progressing so quickly that he cannot keep up with class or teacher. Again, this response is observed in relation to aud. activities.	When child is given individual or group instruction, teacher structures presentation so that he is not left, for long periods of time, to rely on conversation without visual aids or direct, active involvement.	1. Teacher cuts down on direct focus on disabled auditory function; i.e., until the child establishes a base of success, the teacher may select other visually oriented methods of instruction (e.g., primary reliance on increasing sight vocabulary). 2. If direct focus on auditory disability is continued, pace of presentation is slowed, both during individual instruction and during group participation.	1. During teacher-directed activities, child is seated where he can distinguish conversation as easily as possible and can pick up other visual cues from the teacher and other children. 2. During independent activities, child is placed apart from group where distraction will perhaps be lessened. Screens or "offices" may be helpful in these instances.

TABLE 7

EXAMPLES OF BEHAVIORAL DISTURBANCES ASSOCIATED WITH VISUAL LEARNING DISABILITIES AND RESPECTIVE MODIFICATIONS OF TEACHING STRATEGIES

Behavioral Disturbances Associated with Visual Disability	Modifications of Teaching Strategies		
	Type of Materials	Sequence of Tasks	Placement of Child in Class
1. Child is easily distracted by presence of other children when working independently at his seat. He finds it difficult to attend for sustained periods of time. 2. Child seems overwhelmed and confused by pictured materials or puzzles which include many objects, people, or other kinds of stimuli. 3. Child gives up easily if requested to accomplish a task which relies principally on visual discrimination. 4. Child becomes confused during writing activities.	1. Teacher uses materials that are not "cluttered" (e.g., in teaching sequencing, she may use forms instead of pictures). 2. Writing tasks are structured so that child has clearly outlined clues as guidelines (e.g., he is not asked to "skip" spaces which he is unable to discriminate; rather, he is given clearly defined lines). 3. Typewriter is used to take burden from writing task.	1. Teacher may cut down on focus on disabled area or provide more cues to help the child make discriminations. 2. Pace of presentation is slowed and the child is not required to make discriminations on the basis of speed of perception.	1. During teacher-directed activities, child is not seated at angle so that difficulties in discrimination are not compounded (e.g., if the child is requested to make visual discriminations at a distance (on board or on film), material is presented at eye-level). Also, he is permitted to use all cues that will assist him in making discriminations such as standing up and pointing to correct answers). 2. When child is working independently in group, teacher is immediately accessible. If he is working independently "on his own" he is seated or turned from group.

Earlier in this chapter, the writer commented on the fact that a good number of children in the study apparently had posed substantial "classroom management problems" for some of their former teachers. Although the writer was unable to evaluate directly those existing conditions of prior school experiences of the children, it was apparent during their two-year involvement in the present study that such problems did exist. This particular guideline was concerned specifically with helping both children and their present teachers to cope better with these difficulties.

The two guidelines heretofore discussed in this section on strategies for clinical teaching have been principally concerned with establishing criteria for task selection. The two remaining principles will deal with a second aspect of the proposed organization for instructional practices, criteria for the presentation of tasks. In actuality, these recommendations were considerably more difficult to control, for they were largely dependent upon teacher-child interactions during the course of instruction. In other words, while appropriate task selection could be conceived at a distance from children and demands of teaching, task presentation, although preplanned, was more liable to change with the immediacy of situations and responses of both teachers and children. In addition, there was another confounding factor; i.e., the ways in which presentations of different teachers meet varying needs of children in their classes are numerous and not confined to any one method or approach.

Principles in the following section were not attempts to create a uniformity among or to impose restrictions upon different styles of teaching. Instead, they were involved with making recommendations to teachers which were assumed to facilitate and clarify comprehension of concepts of children during the course of instruction. In some instances, these recommendations would imply a need for change of teaching style, but this was not the primary intent of the guidelines.

PRINCIPLE THREE. Teachers were to establish "predispositions" for learning tasks presented to children. This principle was based on a premise that the ways in which teachers introduce and prepare for task involvement will affect courses of learning of their children. The rationale for this assumption appears justifiable on the basis of at least two reasons. First, it is important that teachers give children reasons to learn. On the basis of their prior experiences and current frustrations, some children find participation to be a difficult, if not an impossible, requirement to meet. A comment testifying to anxieties and behavioral disturbances which some children brought to learning situations has already been mentioned. With these in mind, it was not enough for teachers to assume that presentations of material, however appropriate in form and sequence, would be sufficient to kindle frustrated motivations and desires of children. Probably the willingness of many children to participate fully and openly in learning situations would be largely dependent upon their feelings and recognitions that learning for them was important, meaningful, and worthwhile. Conveyance of this notion would have to extend far beyond a mere statement of fact. It would have to be demonstrated by teachers.

There was a second point supporting the necessity for establishing predispositions for learning tasks. It was concerned with this issue: Unless tasks had a planned beginning which anticipated events and a definite termination point which tied together an accomplished sequence of events, many children were likely to have difficulty in following the "train of thought" of teachers. Put in another way, tasks needed to be characterized by a two-way goal-direction that was discernible, on some level, to children. It was extremely important that teachers not leave children with vague requests for which there was little or no basis for later assessment.

Setting predispositions for learning in the program thus had two objectives: (a) to initiate and maintain open participation of children in various learning situations, and (b) to further the insight of children into concepts during the course of their instruction and independent activities. Although there are numerous means for achieving these objectives, two which seemed especially relevant were selected. These included: (a) recommendations for beginning tasks, and (b) recommendations for ending tasks. Examples of proposed strategies are given below in Table 8.

TABLE 8

RECOMMENDATIONS FOR ESTABLISHING PREDISPOSITIONS FOR LEARNING

Time of Focus	Examples of Strategies
Commencement of Task or Activity Involvement	1. Teacher gives explicit directions, explaining both the nature of the task and procedures for accomplishment. 2. Teacher indicates or provides resources as aids to an accomplishment of tasks (especially if children are working independently). These resources may be either appropriate materials or assistance available from student helpers or teacher during the course of problem-solving. 3. In some instances, teacher raises questions which sensitize children to kinds of questions they will be expected to resolve. 4. Teacher relates proposed task or activity to other tasks or experiences of children in order to establish some base of identity from which they can move comfortably. 5. Teacher releases children from certain burdens which hold them back from free expression. She does this by calling their attention to the fact that they do not have to be concerned with certain aspects of their expression. This technique would involve a considerable period of time in order to obtain an objective of freer participation.

(concluded on next page)

TABLE 8 (concluded)

Time of Focus	Examples of Strategies
Termination of Task or Activity Involvement	1. Teacher gives children feedback on their accomplishments of tasks. She reviews sequence of events or steps in solution and where discrepancies arise, discusses and explains these. 2. In some instances, teacher terminates activity by introducing one more link in a sequence of activities which will be continued in the next presentation. When this technique is used, it should leave children with a feeling of anticipation but still should establish a sense of closure for the link of activity for that particular day.

Strategies such as those cited above were not supposed to demand an excessive amount of time for implementation. In fact, it was expected that they would be more effective if presented briefly to children. To restate two objectives of this guideline in a more general way, recommendations were intended to help teachers establish an order to instructional practices which would carry over to and facilitate the learning of children. Although the specific nature of strategies employed would vary with particular tasks and activities, their intent was conceived as appropriate to all levels of learning.

The fourth and last guideline for clinical teaching was concerned, also, with considerations for task presentation.

PRINCIPLE FOUR. Teachers were to take into account the pacing of tasks; i.e., the duration of task involvement and the variation of activities. This guideline was based on a premise that if activities, either teacher-directed or independent, were sustained for long periods of time, children would learn less effectively. This position was maintained for the following three reasons. First, in view of the observed difficulties of some children to attend, they would be liable, over prolonged presentations, to drift from tasks at hand. Secondly, with several children in one class who place a considerable demand upon the availability of the teacher, structuring of time becomes a crucial factor; in spending excessive amounts of time with certain groups or individuals, other children may not be given their necessary share of guided instruction. Thus, learning suffers. Thirdly, it has been indicated above that more concisely presented tasks, which are broken into many steps, were conceived as more effective. Often, lengthy lessons reflect that a teacher is including too many steps in her presentations or requirements and thus is enhancing probabilities for confusion of the children.

For these reasons, two strategies were recommended to teachers; (a) tasks, either teacher-directed or independent, were not to exceed 25 minutes in duration; and (b) at least for short periods of time, tasks were to be varied in order to introduce change into learning situations. The second recommendation was mainly involved with engaging children in different kinds of activities; e.g., group versus individual instruction, independent versus guided instruction, quiet versus more active participation. Again, needs for change were largely dependent upon particular children.

On the surface, such frequent changes of activity might appear to place greater demands and burdens upon teachers. On the other hand, it was anticipated that, if instruction were more highly organized, teachers would spend less time in attempting to cope with problems which appeared to be arising partly from the structure of educational practices in their own classes. In more structured situations, perhaps more energies could be directed toward observing, teaching, and coming to know children.

Summary and conclusions. This section has been devoted to a discussion of four principles which were considered essential for clinical teaching of children who were known to have learning difficulties. Statements of the principles, their rationales, and selected examples should not be considered as all-inclusive in relation either to these classes or, potentially, to other learning situations. The principal goal of the presentation was a characterization of the kinds of educational and clinical strategies which were supposed to be pursued in the remediation program. It is well to recognize that in terms of the extent and kinds of changes that they introduced into their individual classes, teachers varied considerably. In part, these variations were a result of differing needs of children. Secondly, they reflected differing instructional strengths and weaknesses of teachers. Thirdly, they were a result of the extent to which different teachers, themselves, saw a need and were able to change.

Strategies for the Instruction and Guidance of Teachers

In order to carry out strategies of the remediation program, teachers needed instruction and guidance. Toward this end, it was considered necessary that they have, first, a basic understanding of: (a) learning disabilities and their potential effects upon academic achievement of children, (b) certain materials which might be appropriate for particular difficulties which children were manifesting, (c) techniques for breaking learning objectives into a sequence of steps and tasks for individual children, (d) certain instructional techniques which could be used to cope with behavioral disturbances of children, (e) the ways in which "timing" and "pacing" could be incorporated effectively into the structure of class activities, and (f) ways in which to initiate and enhance participation of children in learning situations. Secondly, it was important that teachers have a clear conception of the specific implications of all of the above for instruction of particular children in their classes. To accomplish these two objectives, the writer held a workshop prior to the commencement of the remediation program and also maintained frequent visits and discussions with teachers over the course of the entire second year of the study.

The workshop for teachers. On September 15-17, 1969, the writer conducted a workshop for teachers at the Boston University School of Education. With one exception, each of the teachers anticipated to be participating in the study during the second year was in attendance. At the three-day meetings the writer: (a) discussed specific aspects of intellectual performance and learning disabilities, (b) presented findings of the diagnostic phase of the study, and (c) outlined plans for the remediation program. In addition, the workshop included presentations of representative learning profiles and individual test results of children in the classes; discussions of developmental scales which were compiled as guides for teachers and which included a hierarchy of abilities and skills of children in six areas of intellectual functioning; and discussions of selected materials that were to be available to teachers during program implementation.

Essentially, the workshop was conceived as an introduction to and orientation for an extensive and somewhat demanding sequence of events which were anticipated to follow over the second year. It was, therefore, important for teachers to have an awareness of the general schema of this plan.

Follow-up of teachers over the course of the second year. Guidance of teachers and monitoring of programs the second year required a substantial involvement of the writer. Immediately following the workshop, the writer proceeded to meet with each of the teachers in order to discuss and make specific recommendations for individual children in the classes. In general, these initial meetings extended over a period of three weeks and included approximately five hours of discussion with each of the teachers.

Subsequent to these meetings, the writer continued to visit and observe classes and to discuss further certain problems which teachers were experiencing. These meetings centered on a wide range of subjects such as the use of particular materials which had been provided by the project, the physical arrangements of classrooms, the amounts of time to be allotted for program activities with individual children, specific needs of individual children and additional suggestions for remediation, and behavioral difficulties of some children. A considerable amount of resource material on the remediation of learning disabilities (which is listed with program materials in Appendix C was also provided to teachers at this time. Moreover, in some instances where teachers persisted in experiencing considerable difficulties, the writer compiled lists of suggestions for strategies and techniques to be employed with individual children. Intensive follow-up was continued for approximately four months until the beginning of January 1970.

Between February and June of 1970, meetings with teachers and visitations to classes were continued but at a much diminished frequency. This approach seemed advisable in light of the writer's feeling that teachers needed to have a sense of personal autonomy in carrying out the program, which some had not developed. Undoubtedly, this was a result of an extreme discomfort that they had felt during the initial stages of program implementation. In a real sense, however, the worthwhileness of such a remediation program in public school classes was contingent upon the feasibility of its implementation for teachers. Unless the program was allowed to proceed at some point without sustained assistance and supervision, this crucial factor would remain largely indeterminable.

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CHAPTER IV

CLINICAL STUDIES OF CHILDREN, THEIR TEACHERS, AND EDUCATIONAL CLASSROOM STRATEGIES

It is a prime intent of this chapter to present clinical data on children, their teachers, and educational strategies and to interpret those data in the light of their potential implications for selected aspects of cognitive development and learning in children. Discussion will be based on analysis of extensive classroom observations and tape recordings of children and their teachers in teaching-learning situations and on detailed evaluation of selected child performances on clinical tests. The chapter will include the following major sections:

(a) Observations and Evaluations of Teachers, Their Classes, and Educational Strategies over a Two-Year Period;

(b) Variability, Multidimensionality, and Consistency in Performance and Behavior of Children over a Two-Year Period;

(c) Case Studies of Four Children;

(d) Determinants of Cognitive Development and Learning: An Attempt at Integration.

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Observations and Evaluations of Teachers, Their Classes, and Educational Strategies over a Two-Year Period

It has been a central contention of the present study that teacher as well as child variables affect cognitive performance, learning, and affective behavior of children in teaching-learning situations. This assumption was made explicit in the clinical model of Figure 1 in Chapter III, which postulates that the teacher-child relationship is one of at least six sources of influence that bear on the realm of interaction and psychodynamics and on levels of intellectual performance and academic achievement of children. Secondly, the contention underlies four principles of clinical teaching of the remediation program which were recommended to teachers the second year.

Moreover, two major assumptions of the study, advanced in Chapter I, are related to this central notion. They are: (a) during the first year instructional practices of teachers would be minimally focused on educational needs of children; and (b) under guidance and supervision during the second year instructional practices of teachers would change to be more in accord with educational and psychological needs of children. Clinical observations provided a basis for describing teacher behaviors, ascertaining the extent to which teachers in various special class settings modified their instructional behaviors, and considering the implications of varying teacher behaviors and changes. Thus, the following discussion will focus on: (a) frames of reference conceived for evaluation of teacher behaviors over the two-year period; (b) presentation of guidelines defining those frames of reference; (c) clinical observations the first year; (d) clinical observations the second year; (e) considerations of teacher change; and (f) some implications of teacher attitudes.

Observation, Evaluation, and Frames of Reference

Although the original plan of classifying individual verbal responses and behavioral acts of teachers in terms of two observational schedules was relinquished in favor of a more direct, general approach to evaluation, it was still necessary to base observations and meaningful interpretations on specific points of consideration. These points of focus were conceived in the light of certain theoretical assumptions which were variously spelled out in the clinical model and four principles of clinical teaching. More specifically, they include the following four considerations:

(a) teacher-child interactions;

(b) task presentations with respect to educational needs of individual children (i.e., establishing a predisposition for learning and appropriate pacing of tasks);

(c) task selections with respect to educational needs of individual children (i.e., intellectual strengths and weaknesses and class behaviors of children);

(d) organization of class instruction.

Recommended strategies of the remediation program were focused primarily on changing teacher behavior with respect to the last three points. At the same time, however, it was anticipated that without change in some teacher-child interactions, adherence to specific teaching principles might have little effect. Thus, the present section will involve descriptive analyses of observations of teachers, their classes, and educational strategies over a two-year period in relation to each of the four frames of reference.

Criteria for Evaluation of Four Frames of Reference

Because teacher behaviors were not classified in accordance with predetermined response categories and criteria, evaluation of frames of reference were based exclusively on the writer's perception of various aspects of teaching-learning situations. This approach was necessary in view of two considerations. First, as mentioned earlier in Chapter III, as a result of large demands of other facets of the study, it was not feasible to pursue the original plan of a detailed item analysis. Second, more important and relevant to the underlying rationale for teacher observation, selection of this approach resided in the need for a procedure which would allow for establishment of differential criteria for evaluation of the four frames of reference.

There were several reasons that it was impossible to establish criteria universally appropriate for the four frames of reference. Specifically, the points of focus represented varying dimensions of teacher behavior which were conceived to differ substantially in terms of such factors as their relative importance to performance, learning, and behavior of children; their liability to teacher change; and the nature and difficulty of their evaluation. Moreover, insights specific to each of the four dimensions of teacher behavior would have been considerably more difficult to determine on a basis of response classification in accordance with fixed criteria and categories of the two observational schedules initially selected.

In particular, task selections and class organization involved more defined and limited dimensions of instructional behavior which could be evaluated largely on a basis of their appropriateness in teaching-learning situations. On the other hand, teacher-child interactions and task presentations included an array of countless responses which varied widely in their apparent educational and psychological effects on individual children. Too, it was anticipated that these dimensions of teacher behavior might be more liable than class organization and task selections to vary as a function of time, circumstances and particular children. As a result, it was likely that teacher-child interactions and task presentations would be less constant across children in selected classes and over time than behavior relating to task selections and class organization. Such an eventuality would increase difficulties of evaluation of these more inclusive aspects of teacher behavior.

In light of these considerations, specific criteria were designated as guides to evaluation of each of the central points of focus. They are by no means exhaustive in terms of all of the impressions, reflections, and conceptions which have been brought to bear on evaluations of teacher behavior. However, these guidelines have provided a frame of reference for the writer's interpretation of a vast amount of clinical data. Hopefully, further, they will enhance the reader's understanding of "why" and "how" the writer has arrived at certain conclusions in relation to observations of teacher behavior. The following discussion is devoted to a presentation of criteria for evaluation of teacher behavior in relation to each of the four frames of reference; i.e., teacher-child interactions, task presentations, task selections, and class organization.

Teacher-child interactions. In general, criteria regarding this dimension of teacher behavior were centered on determinations of the extent to which teachers, in either verbal or nonverbal ways, displayed sensitivity to psychological needs of children. The following considerations were conceived to provide an indication of the nature of interactions of different teachers with children in their classes.

(a) Rather than criticizing and prohibiting expressions of problems, desires, and needs, teachers listened to such responses and shared these concerns with children. They were willing to participate in reality-testing processes of growth of their children.

(b) Teachers used alternative means to verbal derogations and cursory demands in coping with behavioral disturbances of children. For example, they attempted to facilitate understanding by verbalizing to children their feelings about and reasons for particular actions and responses.

(c) Teachers were supportive to children in situations where they revealed higher levels of emotional and/or intellectual functioning. Further, they were encouraging to children who were experiencing difficulties in accomplishing particular academic tasks and in coping with certain emotional problems.

(d) Teachers verbalized their expectancies of more self-enhancing, reality-adapted behaviors rather than anticipations of failure-oriented, self-derogating, and egocentric responses of children.

(e) Teachers behaved in ways that communicated a belief in the self-sufficiencies and a respect for needs of personal autonomies of individual children. For instance, they were willing to delay requirements for change until later stages when children indicated that they were able to act more independently in accordance with their own self-systems and cognitive structures.

(f) Teachers responded differentially to individual children in terms of varying psychological needs rather than in terms of fixed rules and regulations and/or their own personal desires and requirements, irrespectively applied to all children.

In their relation to evaluation of teacher behavior, these guidelines were not intended to be measures of uniform patterns of response. In fact, greater understanding of and sensitivity to varying psychological needs of individual children more likely would be reflected in increased differentiations of teacher behavior. For example, it was quite possible that teacher responses, appropriate in time for a particular child, would be totally inadequate for reaching that child under different circumstances or for meeting different needs of another child. For this reason, evaluation of teacher interactions with children required not only interpretation of teacher behaviors per se but also consideration of behaviors of individual children, which partly determined the nature of specific teacher responses and, moreover, provided a frame of reference for evaluation of the appropriateness and degree of sensitivity of those responses in particular situations.

Finally, evaluations of varying degrees of response sensitivity of different teachers to children in their classes have been based on several determinations. These include considerations of the following factors:

(a) the extent to which behaviors of different teachers were characterized by the aforementioned criteria and the nature of those specific teacher responses;

(b) the consistency of sensitive teacher responses over time and in different situations;

(c) the consistency of sensitive teacher responses in relation to different children;

(d) the apparent relative impact of varying teacher behaviors on different children in terms of observed emotional responses and intellectual performance.

In light of these determinations, it will be a prime intent underlying discussion of this dimension of teacher behavior to reveal response differences, in addition to more general characteristics and, further, to reflect upon possible sources of teacher variance.

Task presentations. Evaluations of task presentations, a second extremely variable dimension of teacher behavior, have been limited to two primary considerations. They are: (a) the establishment of predispositions for learning (i.e., ways in which teachers prepared and maintained motivation for child involvement in learning tasks); and (b) the appropriate pacing of cognitive tasks. These considerations comprised two principles of clinical teaching recommended to teachers the second year.

The following guidelines, several of which have been stated as recommended strategies in Table 8 of Chapter III, were conceived as a basis for evaluating behaviors related to the establishment of predispositions for learning.

(a) Teachers gave explicit directions, explaining both the nature of particular tasks and procedures for accomplishment.

(b) Teachers related proposed tasks to previously acquired knowledge and experiences of children in order to establish a base of goal-direction and identity which could help to facilitate functioning on a more comfortable level.

(c) Teachers raised pertinent questions in order to sensitize children to similar kinds of issues to be resolved in proposed tasks.

(d) Where children displayed anxieties about participation in learning situations, teachers followed them through accomplishment to successful completion of particular tasks. In other words, teachers attempted to reorient fearful attitudes and feelings toward learning in a more positive direction by providing "success models" for children.

(e) Teachers indicated or provided resources as aids toward child accomplishment of tasks. These resources involved either appropriate materials or assistance from other children or the teacher during the course of problem-solving.

(f) Teachers released children from certain burdens (e.g., correct spelling) which sometimes placed constraints upon free expression and mobility of thought processes.

(g) To a limited extent, teachers raised pertinent questions in order to arouse curiosities of children and lead them to higher levels of cognitive functioning.

(h) Teachers gave children immediate feedback on their accomplishment of various tasks.

Like the dimension of teacher-child interactions, behaviors relating to an establishment of predispositions for learning covered an almost limitless range of responses. Thus, evaluation of this aspect of teacher behavior also involved determinations of degrees of teacher sensitivity to psychological and educational needs of individual children in varying situations. For the purpose of making these perceptions, the aforementioned criteria were examined in light of the four factors, cited above, which were conceived for evaluation of teacher-child interactions. To summarize, these included considerations of the nature and consistency of teacher responses, over time and in relation to different children; and varying emotional and intellectual responses of children to teacher behaviors.

The second primary aspect of task presentations was concerned with appropriate pacing of tasks; i.e., the duration of task involvement and variation of activities. Several criteria have been established for evaluation of this dimension of teacher behavior. Some of these guidelines, also, have been previously cited in the section on strategies of the remediation program. They are restated here in order to clarify frames of reference which have been used for evaluation of teacher behavior. Guidelines respective to this dimension are:

(a) Teachers involved children in particular learning tasks for sustained periods of no longer than 25 minutes in duration.

(b) Teachers varied tasks in order to introduce change into learning situations. In other words, children were engaged in different kinds of activities such as group versus individual instruction, independent versus guided instruction, and quiet versus more active participation.

(c) Relative to both guided instruction and independent activities, teachers limited the amount of information presented to children in any one task. Such determinations required specific insights concerning learning styles and the nature of proposed tasks, rather than a general approach to children.

(d) Recognizing that children vary at different times in their openness to learning, teachers were sensitive to the contemporaneity of psychological behavior of children. Their requirements for participation of children in learning situations and accomplishment of designated tasks were flexible.

Teacher behaviors regarding appropriate pacing of tasks were evaluated in terms of the extent to which they met the above criteria and their appropriateness in relation to different children.

Task selections. Task selections, the third frame of reference conceived for evaluation of teacher behavior, also included two major considerations. The first of these was concerned with teacher selection of learning tasks in accordance with intellectual strengths and weaknesses of individual children (i.e., levels of performance of intellectual functions and configurations of strengths and weaknesses revealed in diagnostic evaluations). The second consideration involved task selection in accordance with classroom behaviors that appeared to be relevant to individual styles of learning. Like the dimension of task presentations, these conceptions formed a basis for two principles of clinical teaching recommended to teachers.

Evaluations of the first aspect of task selections were intended to reveal the extent to which form and sequence of instruction reflected specific teacher awarenesses of intellectual strengths and weaknesses of individual children. A schema exemplifying a general progression of development of intellectual operations, potential sources of learning disabilities, and appropriate remediation strategies has been graphically presented in Figure 2 of Chapter III. More specifically, the schema included some of the following guidelines concerning appropriate form and sequence of learning tasks.

(a) When focusing instruction directly on most severely impaired intellectual functions of children, teachers presented tasks that were less demanding, required more gross discriminations and associations, provided multiple clues toward problem-solving, and were highly structured.

(b) As children became increasingly able to make more complex discriminations and associations, teachers gradually increased levels of difficulty of tasks. This strategy required selection of tasks that offered fewer stimulus-bound clues toward problem-solving, and applied newly acquired skills and knowledge to varying problem-solving situations including accomplishment of more academic tasks. However, more complex tasks were not pursued until children had revealed fairly stable, successful performances on more fundamental levels of functioning.

(c) Teachers used multisensory instructional approaches to learning, which placed lesser burdens on most severely impaired intellectual functions and relied more predominantly on intellectual strengths of children for gaining information.

(d) Teachers presented directions and explanations to children in ways that reflected their considerations of stages of intellectual development and specific learning disabilities and strengths of children. For instance, in contrast to relying on verbal explanations to young children who had difficulty in comprehending and recalling spoken language, teachers frequently employed additional means for communicating instruction; e.g., visual demonstration of concepts.

(e) Sequences of tasks over time revealed careful teacher planning of steps leading to meaningful educational objectives for individual children. Moreover, the direction of specific sequences of tasks was guided largely by learning styles of individual children. For example, assuming that a teacher was attempting to increase a child's sight vocabulary for reading, sufficient repetition was planned in accordance with that child's particular learning rate, rather than random repetition over prolonged periods of time.

Evaluation of teacher awarenesses of intellectual strengths and weaknesses of children was based on the extent to which teacher instruction was characterized by the aforementioned guidelines and the degree of appropriateness of task selection for particular learning needs of different children.

The dimension of task selection included a second consideration. This was concerned with a structuring of tasks in accordance with observations of classroom behaviors of children which seemed relevant to individual styles of learning; i.e., (a) excessive distractibility appearing to arise from the use of certain materials or the presence of other children; (b) excessive distractibility appearing to arise from low levels of tolerance when focusing directly on areas of disability; and (c) excessive anxiety observed prior to commencement of instruction. Such behavioral manifestations of children implied a need for the following guidelines:

(a) Teachers employed techniques for "screening out" auditory and/or visual stimuli of classes which appeared to be unusually distracting to certain children; e.g., changes in physical placements of children during instruction.

(b) Teachers used less visually distracting materials where behavioral manifestations of children indicated a need for such modifications in instructional materials.

(c) Where children displayed low levels of tolerance for learning tasks which focused directly on severely impaired intellectual functions, teachers altered their approaches to rely almost exclusively on learning strengths of children. This point is similar to guidelines "a" and "c," which were specified for the first aspect of task selection. However, it implies a need for a greater degree of reliance on intellectual strengths of certain children than might have been indicated initially by profiles of learning functions. For example, for some children predominantly auditory rather than visual approaches to learning were much more appropriate.

(d) In particular instances where involvement of severely impaired intellectual functions seemed unavoidable, teachers selected tasks where children were assured of experiencing continuing successes. This strategy involved not only careful consideration of levels of difficulty of tasks but also attention to ways in which tasks were presented and the pacing of tasks.

This kind of approach was also pursued where children displayed excessive anxiety prior to commencement of instruction.

In essence, the foregoing criteria re-emphasize a major point which was repeatedly stressed to teachers throughout the second year. It is this: Although largely determined by evaluation of cognitive performances, task selection equally requires sensitivity to classroom behaviors of children that appear to be interfering with learning processes. In light of this notion, evaluation of teacher behaviors was based on consideration of ways in which various teachers modified their instructional practices in accordance with such behavioral manifestations of certain children.

Organization of class instruction. Effective class instruction involves consideration of psychological needs of different children on an individual basis. It also includes an organization and coordination of ways for meeting those needs within the context of teaching and interacting with several children in a classroom situation. This fourth dimension of teacher instruction is particularly crucial in view of the fact that often intellectual and emotional needs of learning disabled children are quite demanding. In large part, effectiveness of class organization is directly contingent on the degree of teacher sensitivity to individual children in relation to such factors as the aforementioned guidelines. Yet, to be maximally beneficial, teacher instruction requires additional considerations. Although not spelled out in the form of a principle for clinical teaching, these guidelines were discussed frequently with teachers. They include the following points:

(a) Teachers clearly differentiated between functional and instructional levels in the process of their teaching. More specifically, whenever they placed several children in independent situations, teachers required accomplishment of tasks that were familiar to children and could be completed with considerable ease; i.e., tasks were conceived on a functional level. On the other hand, individual instructional situations were concerned more primarily with presentation of less familiar concepts and concentration on more severely impaired learning disabilities of children; i.e., tasks were conceived on an instructional level.

(b) Teachers allocated specific times during the course of instruction for reviewing, checking, and clarifying understanding of tasks which children had accomplished in more independent situations.

(c) Teachers coordinated durations of individual instruction with periods of independent activity. In other words, pacing of tasks was crucial not only for individual children but also for groups of children engaged in varying activities.

(d) Teachers varied activities so that children who were engaged in more independent kinds of tasks were not left for prolonged periods of time without teacher direction and interaction during the course of individual instruction.

(e) Teachers carefully planned physical placement of certain children who were less liable to function well in close proximity with other children. This strategy was appropriate in both individual instructional and independent activities.

(f) Teachers preplanned tasks for certain children whose levels of tolerance for learning situations were low. Such strategies tended to release anxieties of children who were experiencing emotional problems and minimize further confusion and disturbance of other children in classes.

(g) Teachers gave certain children responsibility of following their own sequences of daily activities which were indicated on individually prepared activity cards. Such an approach was not always possible in view of the lack of self-direction, anxiety, and frustrations of some children. Moreover, it required extremely careful planning in order to avoid placing children in totally independent situations over extended periods of time. At the same time, the approach could be exceedingly helpful in certain instances toward preparing children for anticipated learning situations, providing opportunities for development of greater self-direction, and creating a sense of purpose and organization to total class learning.

In view of the fact that each of the classes represented a unique situation in terms of diverse emotional and intellectual needs of children, total numbers of children, availability of certain resource materials and equipment, and varying styles of teacher instruction, specific means for accomplishing some of these objectives varied a great deal. For this reason, organization of class instruction of teachers was assessed on a basis of the appropriateness and corresponding effectiveness of different instructional techniques in establishing a comfortable learning environment for children.

Summary and conclusions. The foregoing section has been concerned with presenting guidelines which comprised a basis for evaluation of four dimensions of teacher behavior; i.e., teacher-child interactions, task presentations, task selections, and organization of class instruction. As mentioned earlier, discussion of clinical observations of teachers, their classes, and educational strategies subsequently will be focused on examination of teacher behavior and class events in relation to each of the four frames of reference and their respective guidelines. Inevitably, such an approach sets certain limitations to interpretation and discussion of behaviors which are sampled from a wide array of many responses and classroom situations. Clinical observations of the present study are no exception to this process of selectivity. Indeed, behaviors which appeared to illustrate specific points of interest and to exemplify particular characteristics of varying styles of teacher interaction and instruction have been chosen for description and discussion.

Such judgments are not made easily. Moreover, they involve extremely complex decisions which, neither wittingly nor unwittingly, yet may reflect strong biases and predispositions of an observer. With respect to the ensuing clinical observations, the writer lays no claim tc "absolute objectivity." At this point in the mainstream of exposition, it should be evident that the writer holds very definite, partisan feelings and attitudes about children termed "mentally retarded," their potentialities for changing, and the present status of research and education provided for their learning and emotional problems. At the same time, however, the writer also recognizes an important responsibility of a researcher to avoid making evaluations of data which unfairly reflect such biases. In an attempt to prevent such distortions, specific criteria for evaluation of teacher behaviors were selected. Moreover, hopefully, descriptions and analyses of behavior observed in selected special class settings over the two-year period will be extensive and clear to a sufficient degree that will permit the reader to draw his own conclusions with regard to observations of certain behaviors and the validity of the writer's interpretations of those behaviors.

Clinical Observations During the First Year

The following discussion will focus on clinical observations obtained during the first year of this investigation. It will include two principal sections. The first will present an overview of observations of the six teachers and their respective classes of children who participated during the preliminary stage of sample selection and the first diagnostic year of the study. The second will focus on more specific considerations of teacher behavior in relation to the four frames of reference and guidelines for teacher evaluation.

An overview of observations. Continuous clinical observations of teachers and children engaged in teaching-learning situations over a sustained period of time offer a unique opportunity for a researcher to study and gain insight into complex psychological behaviors and diverse educational processes. Between September 1968 and June 1969, the writer shared such an unparalleled experience with six teachers and 48 children. In particular, on a weekly and biweekly basis the writer observed six public school educable special classes located in four communities of the Greater Metropolitan Boston area. These clinical observations furnished a tremendous wealth of data that have sparked many questions, impressions, and several central conceptions of this study relating to the need, possibilities, and procedures for development of special therapeutic-educational interventions with learning disabled children termed "mentally retarded." The following discussion will present some general impressions of teachers, their classes, and educational strategies observed that first year, in addition to a brief consideration of the implications of those observations.

During the course of the first year, the writer observed many varying behaviors of teachers which exemplified unique styles of teaching and interacting with children. Yet, equally present were instances where behavioral acts and events reflected commonalities among the six teachers. These points summarize some important general impressions of teacher behavior, classes, and instructional practices.

1. In terms of degrees of sensitivity and appropriateness, teacher behavior and instruction with individual children varied considerably both among and within classes. At the same time, teachers also disclosed evidence of marked stability in their behaviors. To qualify these statements further, observations revealed that: (a) each of the six teachers was unique in the extent and ways that she was psychologically and educationally supportive to children in her class; (b) although varying with different children, there was a general character to teacher behavior in each of the classes which fairly consistently pervaded and distinguished interaction and instruction with all children (e.g., certain teachers were generally more supportive in their interactions with children; others showed evidence of much less insight into and compassion for needs of children); and (c) although teachers

behaved differently with different children, their interactions and instructional practices with particular children were quite stable over time.

2. While some teachers were fairly consistent in the extent to which they did or did not meet criteria of the four central dimensions of teacher behavior (i.e., teacher-child interactions, task presentations, task selections, and organization of class instruction), others were remarkably diverse. For example, some teachers were generally more sensitive in terms of both their interactions and various aspects of instructional practices with children. Yet, others were more responsive regarding only one or two dimensions of teacher behavior.

3. Among the six teachers, teacher-child interaction was the most variable dimension of their behavior. Moreover, quite often the degree of sensitivity to teacher behavior relating to this dimension set the "tone" for effectiveness of instruction with particular children. However, as mentioned in point "2" above, sensitive teacher-child interactions did not guarantee appropriate and maximally beneficial instruction with children. Ways of presenting tasks, also an extremely variable dimension of teacher behavior, were almost equally determinant in the effectiveness of instruction.

4. While varying somewhat with each of the six teachers,

in general, instructional practices were predominantly oriented toward child accomplishment of highly verbal academic skills. Frequent discussions throughout the first year seemed to confirm the writer's speculations that most of the teachers really did not know how to approach teaching children with special needs in alternative ways.

5. Although teachers met educational needs of children to varying degrees by means of such an approach, in general, instruction was presented to children in groups rather than on an individual basis. In light of the kinds of materials and teaching strategies employed, it appeared that such groupings were made primarily on a basis of the sole criterion of "grade level."

6. Most instructional practices in classes were lesson- rather than task-oriented. In other words, several teachers were concerned with presenting certain content materials rather than individual tasks with more specific, clearly discernible objectives.

7. To varying degrees, each of the six classes was characterized by emotional outbursts of children. In some classes, such manifestations were quite pervasive; in others, they were limited to two or three children. In either case, factors precipitating such outbursts of children varied among but were quite consistent within individual classes. More specifically, in some classes the onset of such behavioral manifestations appeared to

originate in greater measure from teacher responses. In other classes, they more evidently arose from child reactions.

8. To varying degrees, children in each of the six classes spent considerable amounts of time engaged in such behaviors as talking and playing with other children, walking about classrooms, and gazing out windows. Although to a large extent such manifestations reflected excessive distractibilities of certain children, they appeared to be equally symptomatic of varying problems underlying instructional practices of some teachers.

9. Over the course of the first year, children in each of the six classes frequently verbalized their awarenesses of and frustrations with placement in special classes. While, most assuredly, such feelings and attitudes arise from many sources, it did appear that several of the teachers behaved in various ways which were conducive to reinforcement of these kinds of responses of children. This point will be discussed in considerable detail in a later section of the present chapter. It is mentioned here because these occurrences were such common observations. Too, they are conceived to have far-reaching implications.

These general observations and impressions raised several questions which were pertinent to anticipated attempts to bring about change in children the second year. In essence, they centered on one major concern; i.e., without some greater to lesser degrees of modification in teacher behavior, probably children would not show evidence of change to any substantial extent. Moreover, similar to attempts to facilitate change in behaviors and performances of children, modifications in teacher behavior also would require at least a basic understanding of "how" and "why" teachers responded in certain ways and some awarenesses of those dimensions of behavior which were more liable to change. In more specific terms, the following issues were paramount:

(a) What differences in behavior among the six teachers accounted for more supportive interaction and instruction with children? Did teachers who were more supportive or, in contrast, less sensitive to children share certain characteristics of behavior; or did teacher uniquenesses flood out evidence of commonalities?

(b) Why did teachers in individual classes behave differently (i.e., were less sensitive or more supportive) with different children? Did they appear to hold predispositions in attitude toward certain children which largely influenced the nature of interaction and instruction with those children; and/or did behaviors of certain children appear to evoke repeatedly certain kinds of responses from teachers?

(c) Were behaviors and performances of children in classes where teachers were generally more supportive substantially different from those of children in classes where teachers appeared to be less sensitive and insightful?

(d) What factors appeared to account for the unusual stability in behaviors of some teachers in relation to certain children? Again, were these responses a reflection of attitudes and styles of teaching that were impervious to change in behaviors of children; or, in fact, were behaviors of children correspondingly inflexible?

(e) Did appropriate instructional practices appear to be related to such factors as numbers of children in classes or availability of certain kinds of materials and equipment?

(f) What dimensions of teacher behavior could be changed in light of the possibility that behavioral manifestations of some teachers were largely reflections of attitude?

(g) Would changes in behaviors of teachers be reflected in corresponding changes in behaviors of children? In other words, would behavioral manifestations of distractibility, anxiety, and frustration of children decrease in accordance with apparent teacher changes?

Four of these issues are generally concerned with considerations of "why" teachers behaved in certain ways with children. They will be the focus of discussion here. These include questions "b," "c," "d," and "e." Discussion of the three remaining issues will be delayed until later sections for the following reasons.

First, conclusions relating to the extent and effects of teacher change obviously had to remain open-ended until observations the second year. Thus, the last two issues will be reserved for consideration in the third part of the present section; i.e., Considerations of Change in Teachers, Their Classes, and Educational Strategies. Secondly, the question of the nature of teacher behaviors characterizing more supportive and less sensitive interactions and instructional practices with children, i.e., question "a," is the focus of major emphasis in the next section on specific dimensions of teacher behavior in individual classes and can be addressed more directly in light of the kinds of data which will be brought to bear in that discussion.

In accordance with their unique, personal styles of instruction, some teachers in this study aided children to enter into and participate willingly, fully, and enthusiastically in processes of learning. Other teachers were less successful. Why? This question is of major importance in specific relation to the present study. More broadly conceived, it is directly relevant to all efforts where educators, therapists, and clinicians are engaged in attempting to develop and nurture, in themselves and other human beings, greater sensitivities and capabilities for living and learning. In either sense, the question warrants careful consideration. At first glance, in view of wide variations frequently observed among many teachers and clinicians, one may be strongly inclined to conclude quite simply that some people are more altruistic and thus supportive in meeting various needs of their fellow human beings. Indeed, wide differences in behaviors among teachers who participated in this study were apparent. Yet, on the other hand, if one ultimately believes that teachers are ever capable of changing, learning, and becoming increasingly sensitive to intellectual and emotional needs of children, response to this question must extend far beyond a mere recording and superficial interpretation of classroom events. It entails close examination of the meaning of and multiple factors contributing to various behavioral manifestations. The intent of such an examination underlies the following interpretation of teacher behaviors observed the first year of this study.

Under the best of all possible circumstances, teaching children who have learning and emotional difficulties is not easy. Likely among classroom events, common occurrences will often be characterized by wide extremes of feeling, attitude, levels of performance and learning, and affective behavior, all of which may be difficult to cope with and little understood. There may be moments of overwhelming joy when a teacher may sense, indeed know, that somewhere, somehow, along a long line of tumultuous events a child has changed and become able to cope more effectively and comfortably with the challenge of his own personal and external problems. At the same time, these moments may be widely interspersed with periods of what seem to be never-ending frustrations of apparent inconsistency in behavior, lack of recall of supposedly acquired skills and knowledge, perpetual class disruptions, excessive distractibilities, and incessant vacillations of feeling.

To help children to grow and learn in the midst of such experiences, teachers will need to draw deeply from wells of varying, personal resources. Some of these will involve technological competencies, ranging from application of knowledge of broad concepts of child development and theories of learning to more specific considerations such as appropriate sequencing and reinforcement in processes of learning various phonemes for decoding words. The nature of interpersonal relationships and the climate of learning will be largely influenced by teacher attitudes, feelings, and beliefs regarding learning and emotionally disabled children; e.g., convictions about the importance of learning for impaired children; respect for their worth and individuality as human beings; a compassionate understanding of why they behave in certain ways, together with a fervent belief in their potentialities for changing. Personal awarenesses of teachers regarding their own potentialities for changing behavior, in addition to insight concerning needs and desires they share in common with learning and emotionally disabled children also will be reflected in the nature of teacher-child interactions. Last and equally important, teachers will need to perceive and act, reasonably and sensitively, in accordance with events of the moment.

To the extent that teachers fall short of being knowledgeable about and responsive to such competencies, attitudes and feelings, insights, and perceptions, their instructional practices and interactions are liable to be noneffective in changing behavior toward more positive directions and, perhaps, even damaging to some children. This statement is not intended to imply that behaviors of teachers vary solely as a function of their different capabilities. As with children, teacher behaviors too are enhanced more by certain situations than by others. Such varying circumstances may either increase or delimit possibilities for growth of knowledge and insight. Thus, as mentioned earlier in this chapter in the discussion of guidelines for teacher evaluation, observations of teacher behavior, to reflect any degree of intelligibility, ought to be examined in light of the "settings" within which they have occurred. Even this contention, however, requires careful qualification in view of observations made the first year of this study. More specifically, this point was apparent: Degrees of teacher sensitivity along the four central dimensions of teacher behavior did not vary, in any discernible, consistent pattern, with such factors as greater or lesser numbers of children in classes; availability of special kinds of materials and equipment which were almost nonexistent the first year; administrative freedom to explore new educational innovations; or differences in degrees of impairment and demands of children in various classes. Thus, after all, at least with respect to the six teachers engaged in the present investigation the first year, it did seem that differences in their behaviors arose from sources much deeper than more obvious, superficial factors. Furthermore, these sources ultimately appeared to be very closely related to varying teacher competencies, perceptions, attitudes, and insights.

The dynamics of such teacher characteristics were widely apparent the first year of this investigation. The following interpretations are intended to spell out some of these manifestations.

1. Personal attitudes, feelings, and perceptions of some teachers regarding particular children largely influenced their interactions and, to varying degrees, affected instructional practices with those children. As mentioned earlier in the present section, it was evident that teachers in all classes behaved quite differently with different children. This observation is not especially surprising. Such behaviors seem to be almost inevitable. Moreover, in certain respects, they are highly desirable. Indeed,

one major objective of the remediation program the second year centered on attempts to increase differentiations of teacher behavior in response to individual children. Yet, as observations the first year also revealed, such variations in teacher behavior are not uniformly motivated or necessarily positive in effect. Differences in teacher behavior sometimes stem from predetermined, fixed attitudes, feelings, and perceptions. In these instances, they may run counter to and thwart all efforts to meet individual psychological and educational needs of children.

More specifically, some personal characteristics of certain teachers in this study appeared to underlie these kinds of differences in instructional practices with and frequent responses to children. On the one hand, more positive predispositions seemed to be reflected in: (a) greater durations of time expended in terms of individual instruction; (b) more self-enhancing interactions with children in both instructional and more open interaction situations (e.g., teachers more frequently expressed encouragement, support, and their personal convictions that children could change); (c) greater teacher tolerances of behavior and performance deviations of children; and (d) greater flexibility in response to immediate classroom circumstances. On the other hand, less supportive attitudes and feelings were revealed in observations of: (a) shorter, less frequent, and, in some instances, no opportunities for direct teacher instruction; (b) interactions which were more generally characterized by derogatory threats and demands; (c) considerably less tolerance for behavioral disturbances and difficulties in accomplishment of academic tasks; and (d) as mentioned earlier, tremendous "sameness" in teacher behavior over time which seemed to stifle much responsiveness to contemporary behaviors of children.

In light of such wide variations in behaviors of some teachers, one may still raise the point that these behavioral differences might have been precipitated to a larger degree by behaviors of individual children than by personal characteristics of teachers. In one sense, this issue can never be completely resolved; attitudes and feelings of teachers and behaviors of children do not exist in isolation. They are interdependent and mutually affect one another in teaching-learning situations. However, another explanation is perhaps equally important to understanding why certain teachers, the first year, behaved in varying ways with children. It is this: Whether or not behaviors of particular children actually were different to a degree sufficient to warrant certain responses, some teachers did appear to perceive certain children quite differently and, therefore, felt differently about those children and correspondingly interacted differently with them. Moreover, the nature of these varying responses seemed to indicate that the teachers felt able to cope better with certain kinds of behaviors of children than with others. While numerous reasons for such feelings and attitudes were largely indeterminable and, further, are too involved for inclusion in the present discussion, this factor was apparent; i.e., such attitudes and feelings, in part, were aroused when teachers felt that they could not "control" behaviors of children.

Such observations the first year tended to be somewhat disheartening. In particular, if children in these classes were fortunate enough to be viewed by their teachers in more positive ways, they were afforded more comfortable learning environments which provided greater possibilities for meeting their psychological needs. Yet, if they were perceived in more negative ways, they were limited in and, in some situations, substantially deprived of opportunities which every child, "normal" or impaired, rightfully deserves. Thus, while such variations in teaching practices are understandable, it is difficult to justify such actions of teachers. This view seems to be especially critical in light of the fact that many children who are placed in special classes often remain with the same teachers for periods of two, three, and perhaps four years. In the least, implications of such prospects are very serious in terms of potentially far-reaching, permanent, and damaging effects on the lives and well-being of children who, already, are experiencing learning and emotional difficulties.

While the import of such observations can hardly be ignored, there were also positive considerations the first year, the significance of which should not be minimized. Specifically, certain factors seemed to indicate possibilities for modifying some of these teacher characteristics, in addition to nurturing existing sensitivities and competencies of other teachers. These considerations were:

(a) Although less supportive behaviors of teachers were consistently evident in some classes, they did not universally represent all interactions and instructional practices with children in these classes. In particular, observations that these teachers did behave more supportively with some children disclosed that they were capable of teaching and interacting in more sensitive ways with children.

(b) Not all teachers in the study displayed such wide variations of sensitivity in their interactions and instructional practices with children. In other words, it did seem that either they were able to inhibit such extremes of feeling and attitude toward children or, more likely, they perceived children in ways which were much different from those of more variable teachers. In the latter case, differences in teacher behaviors, in fact, did appear to reflect desired attempts to meet intellectual and emotional needs of children.

(c) At no time throughout the first year did the writer feel that negative responses to children were intentionally harmful. In fact, all of the teachers, to varying degrees, seemed aware of needs of changing certain behaviors and consistently expressed desires for modifying their instructional practices with children.

2. Personal attitudes, feelings, and perceptions of teachers may engender variations in instructional practices and interactions with different children. *Similarly, certain clinical labels may foster teacher attitudes toward groups of children which may adversely affect instructional practices and interactions with children thus classified*. More specifically, observations the first year revealed that: (a) some of the teachers in the study held fairly definite views about children termed "mentally retarded"; (b) these views were clearly evident in some of the ways that these teachers behaved with children in their classes; and (c) although varying to a degree, such behavioral manifestations commonly conveyed the notion that children in these special classes were incapable of thinking and acting, intelligently and independently, for themselves. This conception will not be pursued in any great detail at this point in the discussion, except to substantiate the basis for making such an interpretation. With implications of other

teacher attitudes for learning in children, it will be considered more fully in the final, summarizing discussion of this section. The conception is included here primarily because it represents another source of explanation toward understanding why teachers behaved in certain ways with children in their classes.

Although varying to some greater or lesser degrees, behaviors of teachers who tend to be more sensitive to learning and emotional problems of children may differ considerably from behaviors of teachers who tend more to view children in special classes as "mentally retarded." The following observations exemplify some behaviors of teachers the first year which were conceived to be reflective of such differences in attitude. On the one hand, behaviors of those teachers who were more attentive to specific learning and emotional problems of individual children were characterized by: (a) greater differentiations of instructional practices and interactions in response to performances and behaviors of individual children; (b) less regimentation of children in accordance with fixed rules and regulations; (c) less frequent occasions of open berating of children; (d) less frequent occasions of open discussion of problems of children in the presence of other children and adults; (e) less frequent occasions of overprotection of children; (f) more frequent opportunities for participation of children in decision-making processes; and (g) greater concentration on more positive aspects of behavior and performance of children. In general, such teacher behaviors seemed to hold considerable possibility for communicating to children a feeling that, despite their difficulties in learning, they were important, unique individuals whose feelings, opinions, judgments, and decisions were worthy of respect and consideration.

In contrast, behaviors of some other teachers revealed quite different conceptions of children in their classes. Specifically, their attitudes seemed to reflect commonly held views that "mentally retarded" children are identically and universally impaired in their learning abilities, that they are unable to behave in socially appropriate or acceptable ways, and that they are capable of changing only to a minimal degree. In terms of educational processes and teacher-child interactions, such conceptions of teachers in this study did not appear to yield especially productive or insightful courses of classroom action. In fact, observations disclosed repeatedly that instructional practices and interactions of some teachers were conspicuously lacking in: (a) any vital conviction that children could change in gainful ways or, further, that classroom practices could effect meaningful change in children; (b) awareness that, in spite of their moderate to severe learning disabilities, children did have varying styles of learning which were directly relevant to teaching practices; (c) awareness that modification of learning disabilities and behavioral disturbances toward more positive directions required strategies far different from simple monotonous drill and repetition or coercive demands; and (d) awareness that, like children who are conceived to be "of normal intelligence," learning and emotionally disabled children need opportunities to live and learn in independent and self-respecting ways.

These interpretations are based on the following representative observations of some teachers.

(a) Instructional practices revealed less evidence of differentiation in accordance with performances and behaviors of children.

(b) Disciplinary actions with children tended to be rigid, stringent, and, more than occasionally, nearly harsh. For example, children were often given no explanation for particular requests; they were required simply to conform to predetermined, fixed rules and regulations. If they deviated from those demands and expectations, they were severely criticized with little teacher consideration of the time and setting of such discussions or the probable impact on particular children.

(c) Teachers focused more predominantly on negative aspects of behavior and accomplishment of tasks of children. For instance, greater importance frequently was accorded to tasks inadequately completed than to successful accomplishment of assignments.

(d) Problems of children were freely discussed in the presence of other children and adults, again with little apparent consideration given to the time, setting, or impact of such experiences on children.

(e) Children were severely curtailed in functioning independently and making decisions which were personally relevant and meaningful to them. In some classes, they were rarely offered opportunities for exploring options and alternatives in either instructional or more open interaction situations.

(f) Although difficult to describe in specific terms, this last observation, more generally conceived, revealed that some of the teachers seldom displayed a passionate enthusiasm for or investment in learning with children in their classes. Academic tasks and lessons were matters of mere routine, frequently presented with an apparent intent of keeping children occupied in their seats over prolonged periods of time. In other words, some teachers themselves offered little incentive for children to enter into and participate in learning processes.

To be sure, many factors other than conceptions of mental retardation may account for such behaviors of teachers. Further, the contention that such practices of teachers are by no means exclusive to special education classes for children termed "mentally retarded" probably cannot be disputed. Likely, to varying degrees, similar practices are also in evidence in public school regular classes. At the same time, however, it was difficult to observe such consistent insensitivities of some teachers, together with more supportive endeavors of other teachers, without arriving at the present conclusion: At least in part, these differences in behaviors did arise from varying conceptions about children; in particular, different views of impaired children, their needs, desires, and their worth as human beings.

3. As a corollary to the first two points of this discussion, which have been concerned with the effects of teacher attitudes, feelings, and perceptions on classroom environments, there was a third consideration. It is this: While classroom observations revealed that total demands of children among the six classes did not vary to any large extent, the ways in which teachers perceived these demands and their own teaching situations did differ widely among the six teachers and seemed to influence their classroom behaviors. This observation is based largely on numerous conversations with teachers, in addition to the direct classroom observations.

Similar to varying attitudes and feelings of teachers toward individual children discussed earlier in the first point of interpretation, feelings of frustration and inadequacy regarding total class demands were more predominant when teachers felt unable to cope with their immediate classroom situations. Such attitudes seemed to be variously precipitated by any number of factors such as lack of control of child behavior, a vague or overt awareness that they were not reaching certain children, frustration that they did not have time to reach all children to a degree that they believed sufficient or necessary, chaotic classroom sessions, or inadequate completion of lessons and tasks assigned to children. Moreover, it was apparent that often when such feelings of frustration were particularly paramount in teacher-child interactions, they tended to be somewhat self-defeating. Effectiveness of instructional practices was considerably minimized, and learning environments became strained for both teachers and children.

Again, such observations may not be especially surprising. When persons feel more "in tune" and able to cope comfortably with their immediate situations, probabilities are increased that they will be more open, receptive, and sensitive to other people. On the other hand, when they feel insecure, they are apt to consider circumstances in more egocentric ways, excluding alternative points of view and adhering to their own needs for relief from anxiety and discomfort. Specific to the six teachers in the present study, the major issue is this: Why did some teachers reveal far less evidence of frustration and feeling of inadequacy than did others? Why were certain teachers able to cope more adequately with their classroom situations? While, in large part, answers to these questions extend beyond the realm of feasible determination, some explanation can be offered in light of observations of instructional practices. This interpretation constitutes the fourth and last point of consideration in examining the dynamics of certain teacher characteristics which seemed to underlie teacher-child interactions and instructional practices observed the first year of this study.

4. Technological competencies of teachers appeared to affect their varying attitudes and feelings of adequacy and comfort in teaching and interacting with children. More specifically, these kinds of situations were frequently observed. If children were unable to cope with certain requirements on either independent or instructional levels, if teachers had not taken sufficient care to provide necessary aids for completion of tasks assigned to children, if teachers had not carefully paced groups of children engaged in varying activities, or if lessons were extended over prolonged periods of time and were not varied, children were much more liable to drift from tasks at hand to become engaged in their own sources of amusement. In consequence, teachers became annoyed and frustrated, and purposes of learning were stifled. On the other hand, when teachers provided learning tasks and situations

which were more closely attuned to contemporary performance and behavior capabilities of children, disruptive and strained incidents less often occurred.

Such teacher competencies were not all-inclusive panaceas, sufficient to quiet all fears, frustrations, and distractibilities of children or to resolve insecurities of some teachers. Emotional and behavioral disturbances of some children were quite severe. In these instances, teachers, at most, could expect to minimize anxieties of children. Likewise, in spite of the fact that some teachers were quite competent and sensitive to psychological needs of children in their classes, experienced relatively few disruptive incidents, seemed to be changing children in more positive directions, they continued to feel inadequate. With respect to these teachers, such insecurities and feelings of frustration seemed, in part, to stem from awarenesses of an ever-present gap between their personal desires and expectations for changing children and the pervasive reality that some children, even with advantages of optimally ideal teaching conditions, perhaps would be able to meet these anticipations only over prolonged periods of time.

Summary and conclusions to overview of first-year observations. The foregoing section has presented an overview of teacher-child interactions and instructional practices observed during the course of the first year of this study. Discussion was centered on a presentation of general observations and impressions of teacher behavior among the six classes and consideration of four sources of motivation which seemed to account for certain aspects of teacher behavior. These observations and interpretations were by no means exhaustive. They represented salient, determinable considerations which were, in essence, intended to convey this general conception: Classroom behaviors of teachers are extremely complicated, dynamic processes which originate from numerous sources, are manifested in diverse ways, and bear in complex and varying ways on performances and behaviors of children.

With respect to the foregoing discussion, this conception holds the following implications. First, although observations and interpretations have been presented as discrete points of consideration, it should be clear that behavior and underlying motivations of teachers were conceived as interrelated manifestations. Second, while certain personal characteristics may have been especially predominant in determining particular behaviors of different teachers, such interpretations were not intended to preclude evidence of other manifestations observed during courses of instruction. Conclusions regarding varying practices, interactions, and underlying motivations of teachers have been based on considerations of degree, rather than on designations of absolute, discrete characteristics. Finally, although each of the four sources of motivation was relevant to all six teachers, they were manifested in unique patterns. These implications, in addition to the inevitability that behaviors do have diverse meanings, compounded an already difficult task of attempting to understand varying sources of motivation and their relative impact on behaviors of teachers.

In the final analysis, such determinations of underlying sources of motivation for teacher behaviors may seem somewhat obscure and, perhaps, even irrelevant. Yet, in the judgment of the writer, they were crucial to central purposes of this investigation to study, in intensive ways, behaviors and performances of children. Traditionally, children have been placed in special classes under implicit, if not often explicit, assumptions that their probabilities for learning are minimal. Despite more recent efforts to view conditions of mental retardation in terms of current functioning, these conceptions with respect to individual children thus classified have been quite resistant to change. Furthermore, in light of such conceptions, it has been much easier to assume that children placed in special classes maintain certain behaviors and performances because they are "mentally retarded" or change because they are "pseudo-mentally retarded" than to believe that certain predispositions and practices of teachers may have had a large part in influencing directions of growth in these children. It has been a primary intent of the foregoing discussion to attempt to reveal, generally, a few apparent ways in which underlying motivations and behaviors of teachers observed during the first diagnostic year of the present study did seem to bear on performances and behaviors of children.

Frames of reference, guidelines, and specific characteristics of teacher behaviors. Major emphasis in this section will be devoted to consideration of specific characteristics of teacher behavior in relation to the four frames of reference and their respective guidelines presented at the beginning of this chapter. Specifically, discussion will include: (a) brief descriptions of teacher behavior with respect to teacher-child interactions, task presentations, task selections, and organization of class instruction; (b) considerations of uniquenesses and/or commonalities of teacher behavior which seemed to characterize more and less supportive interactions and instructional practices with children; and (c) considerations of the apparent relative importance of behaviors respective to the four frames of reference to teaching and learning in children. Further, these points of focus should provide additional, specific evidence in support of more general impressions, observations, and underlying motivations of teachers discussed in the overview of first-year clinical observations.

In accordance with the code used in Table 3 of Chapter III, children and their respective teachers of different classes will be identified in the following descriptions by these designations; i.e., A, B1, B2, C1, C2, and D. The first section on specific behavioral observations will consider descriptions of teacher-child interactions in the six classes.

1. Primarily, the dimension of teacher-child interactions was concerned with the extent to which teachers, in either verbal or nonverbal ways, displayed sensitivities to psychological needs of children. In class A, these observations were made. Teacher interactions with each of seven children in this class, not all of whom were included in the present study, did vary. These differences in teacher behavior seemed to stem from efforts of the teacher to attend to widely variant psychological needs of children. In particular, some children in the class were quite hyperactive, easily distracted, and volatile; other children, extremely controlled and less openly communicative, seemed to harbor deep hostilities and anxieties which occasionally erupted with considerable intensity; still other children revealed little evidence of overt emotional disturbances yet displayed marked needs for constant teacher support in their accomplishment of almost every academic task. Despite such wide differences in child behavior, which varied a great deal in terms of requirement of classroom provisions and appropriate teacher strategies, rarely did this teacher engage in derogatory criticism or cursory demands of children. Whenever

emotional outbursts occurred, these problems were discussed calmly with children, usually apart from the rest of the class. Sometimes, deeper sources of such difficulties were considered. Sometimes, discussion with children centered more directly on immediate behavioral acts. In either case, however, these opportunities were made available to all children in the class. In essence, this teacher did listen to her children and was quite willing to share their needs, desires, and problems. Moreover, of further importance, she seemed to view emotional difficulties of the children in terms of underlying sources of origin rather than as simply "behavioral problems." As a result, such discussions, in addition to other occasions of interaction, seemed to be generally positive and self-enhancing to children. Specifically, she frequently praised children throughout the course of their accomplishment and at successful completion of tasks. Explanations for certain requests often were provided; and, once specified, courses of action were consistently followed. Too, children were given considerable freedom in making their own personal decisions. In general, it did appear that such behaviors and strategies of teacher A, together with other important ways of interacting and communicating with children, were especially effective in reaching diverse needs of the children.

Responses of individual children in class A seemed to be a testament to the substantial degree of sensitivity and supportiveness which this teacher revealed in her classroom interactions. In brief, children seldom displayed behavior which countered her requests. To a large extent, in both group and individual instructional situations, they were attentive to her direction. Behavioral disturbances of children often seemed to be markedly diminished whenever she interceded in group or individual situations. Finally, over the year more hyperactive children in the class revealed some evidence of beginning to internalize self-control; e.g., they seemed to be increasingly able to limit impulsive behavior and delay immediate gratifying responses. Because they were child- as well as teacher-directed, these changes seemed to hold at least the possibility for development of further positive, personally autonomous, more highly adaptive behavior in children.

In class B1, the character of teacher-child interactions was vastly different. In general, there was much less free, open, personal discussion with children in both instructional and unstructured situations. Interactions were focused principally on discussion of either academic tasks at hand, which were quite removed from personal experiences of children, or superficial aspects of immediate behavioral disturbances. For example, throughout the course of the first year the writer observed no occasion where this teacher was actively involved in sharing and exploring attitudes, feelings, desires, or problems with children in her class. In fact, children in class B1 infrequently attempted to express such responses in the class setting. At first glance, one might be inclined to advance the thought that children in this class simply behaved in ways which were, for example, far different from children in class A, who were likely to respond in terms of feelings which were meaningful to them. Further, since this class included 14 children in contrast to 7 of class A, perhaps there were fewer opportunities for such involvement.

In large part, observations did reveal that children in this class were not as highly active or apparently distractible as some of those of class A. At the same time, however, such behaviors were by no means indicative that more personal behaviors and questions of children were nonexistent. In fact, the writer's personal encounters with children during individual evaluation sessions and subsequent second-year observations where the children behaved very differently with another teacher seemed to reflect the probability that the pervasive lack of affect of children in this class stemmed predominantly from excessive control and other less supportive, less self-enhancing behaviors with children. In particular, children often were criticized severely for their lack of, inadequate, or slow completion of academic tasks and for behaviors and responses which seemed quite "normal" for any child; e.g., occasional talking during class sessions, failing to stand in straight lines passing to and from various rooms, talking during lunch sessions which were supposed to be observed in absolute quiet, or occasional running upstairs. Whenever such events occurred, children usually were not given opportunities to explain their actions. Further, reasons for particular teacher requests seldom were verbalized. Thus, willingly or unwillingly, children were compelled to accept demands with little freedom or responsibility to participate in personal decisions or to self-monitor their own behaviors other than through defenses of withdrawal and extinction of response. Some positive support was given to children for successful completion of tasks; yet, by far, greater importance was attributed to failure in accomplishment.

Finally, observations revealed that the teacher of class B1, to a minimal degree, did behave differently with individual children. In large part, however, these differences did not seem to be related to individual needs of children but varied, instead, with the comparative ease with which different children grasped teacher-directed concepts. In other words, more supportive and accepting teacher responses were evident in situations where children understood certain concepts more quickly and retained more information. To a considerable extent, this observation seemed to be another reflection of this teacher's limited tolerance for behavioral and performance deviations of children in her class. However, for those children who had more difficulty in learning, such practices resulted in extremely stable patterns of teacher response which seemed to suppress rather than to facilitate and support voluntary participation of children. As pointed out in Chapters II and III of this study, active involvement does appear to be a vital requirement for learning in children. Thus, to some largely indeterminable degree, probabilities were that some children were being restricted in the scope of their learning possibilities.

The teacher of class B2 presented still another style of interacting with children. Similar to the teacher of class B1, she also controlled behavior of children in accordance with fixed rules and regulations and her own apparent personal needs for an extremely quiet, organized learning environment. Yet, within that structure of organization, she displayed wide variations in her interactions, ranging from consistently open and supportive relationships with some children to perpetually frustrating encounters with others. These differences in the character of her interactions with individual children strongly appeared to vary with the extent to which she was confronted with and was or was not able to control more hyperactive, distractible, personally autonomous, and at times challenging behaviors of some students in her class. In particular, disordered communication repeatedly occurred with older adolescent boys who did not conform to patterns of functioning which were more comfortable and manageable for her. As a result, for the greater part of the year, this teacher's classroom experience was plagued by a chronic state of inner turmoil where she seemed unable to understand, accept, or cope with the needs and behavior of certain children. Often, she verbalized this pervasive sense of frustration and inadequacy in reaching these children.

This dichotomy in attitude, understanding, insight, and degree of sensitivity was reflected in almost every aspect of this teacher's interaction with children. On the one hand, in relation to the majority of 16 children, she listened to their concerns, desires, and problems and seemed to welcome sharing their personal experiences. It was clear that she held high expectations for their successful accomplishment of academic tasks and classroom behavior; and at times, she openly verbalized her dissatisfactions with certain occurrences. Yet, for the most part, her responses to these children were tempered with a sense of kindness and respect and a willingness to guide learning and clarify misunderstanding. She was supportive to children who displayed evidence of positive change; and despite persistent difficulties of others, she often reaffirmed her anticipations that they could and would learn. Moreover, within her structured control, she also provided multiple opportunities in learning situations for children to make decisions regarding different kinds of problems. In less formal situations such as art, music, lunch, and recess periods, she was less flexible in presenting options to children; however, her control did not appear to stifle the spontaneity and enthusiasm of children for learning. Finally, within the more restricted classroom setting, she was quite responsive to varying psychological needs of certain children which were manifested in less overt, disruptive behaviors; e.g., needs for sustaining support and encouragement to participate when children appeared uncertain of the correctness of their responses or needs to talk about home and school difficulties.

In contrast to these more receptive, sensitive behaviors with most children in the class, interactions of this teacher with other children seemed to thwart provisions for any kind of comfortable, supportive, self-enhancing learning and living environment. Despite the fact that these particular students were not included in the present study, their interactions with this teacher are mentioned briefly here because they appeared to affect her classroom behavior and frequently her general attitude toward teaching in substantial ways. More specifically, the following kinds of responses exemplified her behavior with these boys. She failed to listen to or provide adequate learning opportunities for these students; e.g., often, lessons were discontinued or not pursued at all as a result of the teacher's dissatisfaction with a particular action or remark. Further, she continually criticized these students in the presence of other children, denied them privileges in punishment, and openly discussed their behaviors during class sessions. In effect, such courses of action appeared to have little success in diminishing certain responses that were disturbing to this teacher. Indeed, criticisms were leveled at these boys for such minor grievances, e.g., failing to hold a book with both hands or calling the teacher "Teach," that probably it would have been nearly impossible for them to have changed their behaviors to the satisfaction of this teacher.

These wide extremes in teacher behavior were consistent in relation to different children and over time.

Observations of a fourth teacher of class C1, more similar in her behavior to the teacher of class A than either teacher of community B, presented a more generally sensitive style of interacting with all children in her class. Like the other three classes, children of class C1 also were widely variant in terms of both their abilities for and ways of learning and their emotional and behavioral disorders. In fact, two of the 11 children of this class appeared to be much more profoundly disturbed than youngsters in any of the other three classes and thus were able to tolerate involvement in learning processes for only limited periods of time.

Yet, to these and the other nine children in the class, this teacher almost always responded in anticipation of their needs, desires, and problems rather than her own. Moreover, whenever she felt unable to understand and sympathize with their points of view, she verbalized these thoughts as well to children. She monitored behavior of children but seldom acted in the presence of anger or responded impulsively. Sometimes, problems were immediately discussed and dissatisfactions explained to children. Sometimes, reactions were delayed until moments when disturbances were less imminent. In other situations, responses to immediate behavior of children were entirely withheld. In general, such strategies seemed to be guided by the nature of impending circumstances and a sensitivity to such considerations as varying capabilities for understanding and control of behavior of different children.

These kinds of sensitivities of teacher C1 were also evident in other aspects of her behavior with children. For example, she seemed to be aware that important moments of "breakthrough" in learning may occur in a variety of less formal as well as more specifically defined instructional situations. Discussions prior to the commencement and at the close of school activities, art and recess periods, and language lessons provided numerous opportunities where this teacher encouraged children to share their more personal thoughts. Instructional situations were settings not only for teaching certain academic skills but also for teaching children how to learn and cope more easily with their personal difficulties. She attempted to help them to become more aware: (a) that in order to learn, they needed to participate with her and the other children; (b) that part of learning involves making mistakes and that they should not expect to perform without error on all tasks; (c) that she was accessible to them when they needed help but also that they were capable of doing many things well and independently; (d) that although they might have difficulty, it was important for them to continue to try to accomplish tasks with care; and (e) that their ideas were important and worthy of expression. These conceptions are not easily conveyed to children for whom learning and emotional problems and various social experiences often spell out total failure. Indeed, children in class C1 verbalized their frustrations and despair in feeling different from other children, in attending special class apart from other children, in having few friends, and in consistent experiencing of difficulties in learning.

Yet, during the course of the year such behavioral disturbances became less frequent and severe. Specifically, although expressions of dissatisfaction by students continued to persist to some extent, they seemed to diminish gradually as children began to experience more success and enjoyment in learning. Resistance and anxiety of children, evident in earlier weeks of participation in learning processes, were less commonly observed toward the middle and end of the year. Too, although their behaviors continued to reveal evidence of quite severe pathology, more profoundly disturbed children did relate to the teacher in strongly positive ways. In essence, these observations seemed to reinforce this central contention of the present study: While some behaviors are extremely tenacious, a supportive learning environment, like that created by the teacher of class C1, has considerable potential for modifying emotional disorders of children.

While class C1 was notable for its generally supportive learning environment, class C2 was conspicuous in its lack of such provisions and apparent confusion and discomfort of children which seemed to be engendered and intensified by behaviors of the teacher. In particular, although her behavior with different children varied to some extent, instructional practices and interactions of the teacher consistently seemed to place children in self-defeating, failure-oriented situations. For the major part of each school day, children listened to constant criticism, derogatory remarks, and yelling. They reached for help in learning but were ignored and told to sit in their seats. Some children were given no direct instruction and assigned no definite activity to occupy themselves. When they attempted to find some source of amusement, they were severely reprimanded and punished, often to be placed in a corner or hall for periods of considerable duration. Throughout the year observations of children repeatedly disclosed feelings of discontent and frustration. The teacher rarely listened to these actions or words of children. Those who were easily upset were often pressured beyond their levels of comfortable tolerance. Thus, frequent outbursts of anger and crying were not uncommon occurrences in this class. The teacher seemed to exercise few reservations in her pursuance of such actions and little consideration of the time and setting of these derogations. The majority of 10 children in class C2 openly and repeatedly were berated in the presence of other teachers, visitors, and peers. In light of these observations, if other children in the school were not aware initially that children in this class were "different," they and members of class C2 probably had few doubts about that notion before long.

These and other behaviors of teacher C2 seemed to run directly counter to probabilities of enhancement of positive feelings and development of self-sufficiencies and personal autonomies of children in learning situations. The teacher attempted to control behavior of her children to a degree that seemed excessive but seldom displayed insight into problems and needs of those children. Children spoke to her; but, more primarily concerned with "behavioral problems" of other youngsters, she appeared indifferent to their presence. She seemed to have little rationale for her actions other than that of her own personal desires to maintain children quietly in their seats; even this objective seemed to serve no valid educational purpose. In contrast to teacher B2, who also required a highly controlled, structured learning environment, she revealed neither an empathy for problems of children nor an enthusiasm and sense of importance about their learning; such behaviors were clearly evident in the instructional practices of teacher B2 with most children in her class. Thus, it was not surprising that efforts of teacher C2 frequently appeared to be noneffective and were met by constant resistances of children. Over the course of the year, these behaviors of children did not show evidence of lessening. In fact, children who most frequently were the object of criticism became more resistant to her requirements.

In terms of difficulties in coping with and teaching children in this class, some behaviors did make heavy demands. The underlying sources of these difficulties are important to consider. In particular, one child was excessively distractible, hyperactive, and easily disturbed. Without question, his presence had a marked effect on the level of tension and confusion evident in the class. At the same time, however, the teacher's reaction to this child constantly provoked emotionally charged incidents where the only source of relief for the child, teacher, and other children seemed to reside in his removal from the classroom. Secondly, as suggested above, similar kinds of problems with other children in this class tended to be predominant. Yet, although they were demanding, behaviors of the remaining nine children appeared to be no more exhausting than those of children observed in the other five classes. What factors accounted for these difficulties? In general, this observation was apparent: To the degree that this teacher pressed children beyond their emotional and intellectual limitations, their needs increased. As a consequence, frequent disturbances appeared to be symptomatic not only of learning and emotional disabilities of children but also of disordered teacher interaction and instructional practices.

Finally, behavior of teacher D reflected still another complex style of interacting with children. Her behavior, although largely supportive to individual psychological needs of the 12 children in her class, varied considerably in degree of sensitivity with immediate classroom circumstances. For instance, when children were disturbed and unable to cope with certain problems, her behavior tended to become erratic and unstable. She became visibly annoyed and impatient with children, more often made judgments and imposed demands quickly without apparent careful thought, and more than occasionally became quite angry with children. Insight of calmer moments seemed to fade into oblivion, and she appeared unable to understand behavior of the children or to act in accordance with any degree of temperance and sensitivity. On the other hand, on frequently observed occasions involving one or two children, her commitment, joy in their learning, and perceptiveness were clearly evident in her behavior. Likewise, the impact was apparent in the responses of the children who were usually receptive to her instruction on such occasions.

In terms of similarities in behavior to the other five teachers, characteristics of teacher D more closely resembled those of teachers A and C1. At the same time, certain aspects of her style of teaching were quite unique. She provided numerous opportunities for children to express their thoughts and share experiences. Too, she was encouraging to children who experienced difficulties in grasping certain academic concepts; yet again, sometimes these sensitivities gave way to impatience and establishment of unobtainable requirements which were met by resistances of children. She seldom reacted to children in terms of fixed rules and regulations; however, when the threat of personal anxieties and frustrations was immediate, responses to children became less differentiated and specific to individual need. Insofar as certain children recurringly triggered class disturbances, they became the focus of less sensitive behaviors of teacher D, and stable patterns of response were established. Still in contrast to teachers

B1, B2, and C2, such behaviors of this teacher did not preclude possibilities of more positive interactions under different, more comfortable circumstances.

One further observation was made: One of the major sources of disturbance in the class seemed to stem from inappropriate control of child behavior. More specifically, often teacher D allowed children wide margins of freedom to a point which appeared to extend beyond their levels of self-control. In these instances, children tended to become extremely active. Mutual tolerances of behavior among children became strained. When emotional outbursts did occur, balances of more stable, reassuring behavior and judgment were difficult to re-establish. These considerations are especially important in light of the observation that volatile, emotional difficulties of more than half of the children in this class were not responsive to teacher-imposed control which often became the final and exclusive recourse to inhibition of certain behaviors. Such an approach, where initial liberties were open-ended and final constraints inflexible, tended to be somewhat inconsistent and probably was not comprehensible to children. These kinds of occurrences were frequent throughout the first year.

Finally, as a corollary to this observation of inappropriate control of child behavior, another characteristic also was evident. While similar manifestations were apparent in other classes, behaviors of teacher D exemplified this characteristic quite differently. In particular, this observation was concerned with the extent to which teachers did or did not allow children to function independently. To varying degrees, due to assumptions that children were conceived to be incapable of making their own decisions and teacher judgments were considered more appropriate to their needs, child personal autonomies were constricted. This apparent lack of respect for capabilities of the children was not especially characteristic of behaviors of teacher D. She tended to be overprotective of children in such ways that personal privacies sometimes were usurped and independencies curbed. However, these behaviors seemed to stem from her concern and exhaustive attempts to meet all immediate needs. She seemed unaware that not all problems are resolved through limitless gratification. While appearing to satisfy immediate needs, these practices made little provision for aiding children in learning such important behaviors as delay and inhibition of certain responses, careful involvement in learning processes without constant assistance of an authority figure, or greater self-control of anxieties and frustrations in threatening circumstances. Children needed a sense of security. Yet, it appeared that these kinds of comforts were so all-embracing, benefits of change were not clearly demonstrated or made sufficiently meaningful to children.

Many children in class D exceeded the upper limit of tested IQ for qualification for placement in educable special classes. Also, as mentioned above, a number of the children revealed considerable emotional overlay. Further, as with the other five classes, demands of the children were extensive. In response to these needs over the year, teacher D appeared to relax some of her concerns of inadequacy in meeting all of those demands. However, again, when pressures of disruptive behavior mounted, her sense of urgency mounted; this kind of concern probably is not uncommon to many teachers and clinicians in their more personal moments of reflection and contemplation. Indeed, it is difficult to witness and share pain of other human beings in light of the reality that often meaningful changes are slow to develop and not easily incurred.

In summary, this first section on descriptions of teacher behavior has been concerned with revealing specific characteristics of teacher interactions with children in the six classes the first year. In important ways, these teachers shared commonalities in their behaviors. In important ways, they differed. Both uniqueness and similarities are relevant to attempts to discern characteristics of supportive learning environments which will be considered at the close of the present discussion.

2. Task presentations, the second dimension of teacher behavior under consideration in these descriptive analyses involved

two points of focus. These included evaluations of: (a) the establishment of predispositions for learning (i.e., ways in which teachers prepared and maintained motivations for child involvement in learning processes); and (b) appropriate pacing of learning tasks. In general, the following observations of teacher behavior relating to this dimension were apparent: (a) teachers varied considerably in the ways in which they were able to motivate children; (b) to a large extent, the motivations seemed to be contingent not only on ways of presenting lessons but also on degrees of teacher sensitivity in interacting with children; and (c) the majority of the teachers revealed needs for greater attention to such considerations as those spelled out in the guidelines for this dimension.

More specifically, teacher A was able to engage initial interests of children in many activities but often had considerable difficulty in sustaining motivations of children over time. Furthermore, as mentioned in the first section, children invariably interacted positively with this teacher. Yet there were occasions when they did resist participation in learning processes. It was evident that these problems were reflections of learning difficulties of the children. In addition, however, they appeared to be revealing of inadequate teacher attention to some important aspects of task presentations. For example, in relation to the establishment of predispositions for learning, it was a common observation that this teacher presented lessons to children without specifically relating knowledge and skills to prior experiences of the children. Since children frequently had difficulties in recall over time, such instructional practices failed to establish sufficient comfort, continuity, and specific goal-direction in their learning. Second, although she often aroused their initial interests, it did not appear that teacher A clearly directed curiosities of children to more advanced levels of thinking. Again, such problems ought to be viewed in terms of the kinds of learning problems which were manifested by children in the class. Over concentrated periods of time, some children had extreme difficulty in focusing their attention. Yet, when their interests were secured on particular tasks, there was little evidence of such teaching strategies as the use of pertinent questions to sensitize children to salient concepts and extend their thinking beyond immediate problem-solving situations. Third, frequently directions were spelled out in no more explicit terms than such designations as particular pages to be read, examples to be completed, or spelling words to be studied. Too, minimal aids toward accomplishing tasks were provided. Fourth, although teacher A was quite supportive to children who had difficulty grasping concepts, she seldom followed tasks to completion in such ways that might have reoriented fearful attitudes and feelings of children in more positive directions.

For example, she periodically checked answers during independent assignments and repeatedly corrected errors in direct instructional situations. While such practices sensitized children to their misconceptions, they failed to demonstrate processes whereby successful accomplishment could be achieved. Finally, instructional practices of teacher A revealed little evidence of attempts to release children from requirements such as correct spelling and punctuation or writing which tended to add burdens to difficulties of expression.

The second aspect of task presentation, appropriate pacing of tasks, was centered on two considerations; i.e., the duration of task involvement and variation of activities. Insofar as different children revealed their levels of tolerance in focusing on particular tasks for sustained periods of time, teacher A was sensitive to such factors as the duration of direct instruction and independent activities; the contemporaneity of psychological behavior and varying degrees of openness of individual children in learning; and, to some extent, necessities for variation in activity. These sensitivities to immediate circumstances were extremely important and desirable. However, there were at least two apparent disadvantages to such total reliance on the contemporaneity of child behavior; i.e., (a) some children were considerably more verbal than others in revealing their needs for change; invariably, teacher attention was directed first to their difficulties rather than equally focused on problems of less communicative children which frequently were left undetected until the termination of particular lessons; and (b) implementation of various teaching strategies in anticipation of certain child behaviors possibly might have introduced greater structure into class activities and, further, diminished some of the inattentiveness observed among children.

In addition to these difficulties in pacing tasks, there was one further observation of characteristics of task presentations of teacher A. In particular, her instructional practices showed little evidence of any consideration of amounts of information presented to children which were expected to vary with individual learning styles and the nature of different proposed tasks. Again, this aspect of teacher behavior seemed to change only insofar as behaviors of individual children altered procedures. Since they were not consistently applied to different children over time, such modifications did not appear to be specifically planned.

In general, since teacher A was extremely sensitive in her interactions with children, characteristics of her task presentations were not entirely nonspecific in approach. On the other hand, if her awarenesses of psychological needs of children had been more pragmatically applied to ways in which she presented knowledge, initial interests and motivations of children might have been more largely sustained and possibly thought processes of children further advanced. Moreover, in addition to a closer coordination between preplanned instructional practices and behaviors of children, designated strategies of task presentation required also some awareness of learning processes of children. As pointed out in the review of research (Chapter II), present understanding of learning in children is far from clear. At the same time, however, it was important for teachers to have at least some basic knowledge of conceptions such as general stages of development of thought processes of children and requirements for learning. Like the majority of other teachers in this study, teacher A gave little indication of awarenesses of this kind of knowledge in her teaching practices.

Despite these apparent needs for greater attention to strategies relating to task presentation, observations that the majority of children in class A seemed to want to learn should not be minimized.

In contrast to instructional practices observed in class A, task presentations of teacher B1 appeared to be minimally based on contemporary behaviors of children. In fact, more primarily focused on inflexible time schedules, completion of designated numbers of workbook pages, and unchanging adherence to daily academic subjects, instructional practices of teacher B1 seemed to have little correspondence with apparent specific psychological needs of children. Ranging from two to two and one-half hours, major portions of every morning were devoted to reading activities. Children of various groups engaged in different tasks with the teacher, usually including individual child recall of 20 to 30 sight vocabulary words, oral reading from basal readers or workbooks, teacher correction of completed workbook materials, periodic presentations of new sight vocabulary, and reassignment of workbook and reading pages. Other children worked independently at their seats on tasks assigned on prior or current days; their activities were interrupted and varied only insofar as they were called to participate with their reading groups. Although afternoon activities reflected more frequent departures from static schedules and invariant forms of task presentation, they still revealed patterns of teacher response which seemed to be far removed from immediate needs of children.

More specifically, these observations represent a few examples of teacher behaviors concerned with the establishment of predispositions for learning. Teacher B1 did give explicit directions to children, frequently related proposed tasks to prior skills, often raised specific questions regarding designated tasks, and gave children immediate feedback on their accomplishment of different tasks. Yet, these practices generally were implemented in relation to groups rather than to individual children. Usually they were centered on more limited dimensions of learning such as skills presented in specific book assignments or recall of story facts; they were seldom applied to comprehension of broader concepts and more advanced thought processes; e.g., understanding of story events which might have been extended to multiple situations. Too, as mentioned in the previous section on teacher-child interactions, teacher B1 rarely attempted to relate academic concepts to personal experiences of children. In light of these observations, purposes of learning often were not made clearly apparent, other than by teacher statement of their importance and necessity.

Children in class B1 appeared to participate in activities to a greater extent in response to teacher demands than from personal motivations to learn. In general, their involvement in learning processes seemed to be placid and somewhat "mechanical," seldom sparked with overt enthusiasm or obvious enjoyment in their accomplishments. Undoubtedly, such behaviors were reflections of attitudes and feelings of children which had developed over considerable periods of time. However, they seemed to be reinforced by these kinds of class events. For example, children frequently were left to their own resources for extended durations of time without direct teacher or child assistance and interaction or aid of special instructional materials to facilitate problem-solving. In direct instructional situations, the teacher did not actively join in and "walk through" processes of learning with children; instead, her direction was concentrated on error correction, which tended to maintain a distance from child involvement in learning. Further, in view of the fact that instruction in this class was conceived primarily in terms of heavily verbal tasks, often requiring writing or pressured recall of information, there seemed to be little opportunity for children to engage in free expression of their thoughts. Unlike class A, where similar provisions also were largely absent but communication among students and the teacher was open and children were more receptive to learning, such practices in this class appeared to inhibit motivations of children. Behaviors of teacher B1 changed in no discernible ways over the course of the first diagnostic year. Further, with the exception of some greater ease of teacher interaction with certain children who seemed to grasp concepts more readily, ways in which she established predispositions for learning were quite consistent with all children. Likewise, behaviors of most children in the class seemed to reflect no substantial change in their attitudes and feelings toward involvement in learning activities.

With respect to pacing of tasks in class B1, there was also evidence of need for modification. Lessons with all children invariably extended beyond 25-minute durations unless terminated by recess, lunch, or specially scheduled subjects such as art. Probably these occurrences were partly responsible for inattentiveness of children commonly observed during excessively long independent activities. Also, different kinds of lessons or tasks were never specifically varied with an apparent intent of altering and relieving sustained efforts of concentration of children. Like those of teacher A, instructional practices of teacher B1 also gave little indication of variation in amounts of information presented to students other than, for instance, assignments of greater or lesser numbers of textbook pages. Finally, as stated at the beginning of this discussion, observations disclosed minimal teacher attendance to changing contemporary behaviors of children. Similar to her patterns of interaction with children, teacher B1 seldom deviated from predetermined, fixed plans and procedures.

Task presentations of teacher B2 differed substantially from those of teachers A and B1. In general, these observations were made:

(a) Like her behavior relating to teacher-child interactions, task presentations of teacher B2 varied with different children.

(b) With the majority of children in her class, teacher B2 did meet a substantial number of criteria defining the dimension of task presentations. On the other hand, in relation to those students with whom communication was strained, direct instruction was much more limited, students were left to engage primarily in assigned independent activities, and strategies for establishing predispositions for learning were essentially nonexistent.

(c) Correspondingly, behaviors of students in class B2 differed with varying degrees of teacher sensitivity. These divergent behaviors of students in response to learning processes were conceived to arise not only from instructional practices concerned with task presentations but also from teacher-child interactions.

In brief, some of the following characteristics of instructional strategies relating to the establishment of predispositions for learning were observed in class B2. They are specific to positive teaching-learning situations. Like her control of child behavior where limitations and expectations were clearly spelled out, purposes and sequential steps toward accomplishment of various learning tasks, as well as their relationships to prior and subsequent knowledge, routinely were specified to children. Questions relating to particular skills and conceptions were rarely confined to teacher inquiries about factual information and correct answers. Children were given opportunities to convey their interests, questions, and curiosities in discussions. Also, teacher B2 frequently posed hypothetical situations or problems which seemed to extend applications beyond immediate circumstances. Such questions were always clearly stated; they seemed to have a goal-direction; and equally important, they allowed the teacher to discern misconceptions of children. In addition to these frequently applied techniques, another strategy was utilized effectively in guiding learning processes. Specifically, it involved successive teacher presentations of carefully sequenced examples and illustrative points which moved from more concrete to more abstract conceptions. Again, in extending particular problems in such ways, the teacher not only presented children with opportunities to grasp multiple conceptions and their relationships but also established a means for determining, more incisively, areas in the sequence of learning where understanding of children faded and teacher assistance was needed. Such observations seemed to be a testament to this teacher's knowledge of learning processes of children and her unique competencies in conceiving of instructional practices appropriate to varying learning difficulties.

In light of these kinds of observations, it was not surprising to find that this teacher utilized other strategies during child involvement in learning processes. These seemed to correspond closely with other designated guidelines. For instance, to a limited extent, children in the class were allowed to seek help from their peers in accomplishing assigned tasks during independent periods. Too, some special resource aids such as number lines and phonogram charts were made available to assist children. Although these provisions could well have been extended beyond their limited use, this teacher's employment of such techniques served a vital function in the classroom in maintaining the flow and continuity of active learning with 16 children. As in class B1, independent activities tended to be quite long; i.e., one to one and one-half hours. Another technique involved efforts to release children from inhibited self-expression and thought processes. On several occasions, the writer observed lessons where the teacher specifically directed children to disregard spelling and punctuation and to try to express freely their thoughts about certain topics. While such strategies did not appear to have an immediate effect on responsiveness of all children, over the course of the year there were some considerable changes in performances of certain students.

At the commencement of this section on first-year observations, the writer concluded that varying sizes of classes did not appear to have particular bearing on instructional practices of some teachers. Ways in which teacher B2 paced learning tasks of children in her class seemed to lend support to this contention. While independent activities often did exceed recommended durations, teacher B2 introduced change into learning situations by allowing some freedom of children to secure assistance from the teacher or other children and by shifting the focus of attention of children to different academic subjects or different kinds of activities; e.g., class versus more limited group or individual lessons. Secondly, she disclosed considerable sensitivity to individual children in terms of the amount and ways in which information was presented. Specifically, if various concepts were especially complex or newly presented, amounts of information were restricted; on the other hand, if concepts were familiar, expectations were increased. Third, although she had strong desires for their learning, she was sensitive to variable, inconsistent performances of students with whom communication was more open.

Like her patterns of interaction, task presentations of teacher B2 with different children were consistent over time. With the majority of students she displayed unique insights. With a few others she seemed to accomplish considerably less effective teaching.

Although her methods of task presentation represented a different approach which was less theoretically based than that of teacher B2, teacher C1 revealed a high degree of sensitivity to varying needs of children. Her awarenesses reflected both a responsiveness to contemporary behavior of children and a purposeful development of instructional practices in accordance with behavioral patterns of different children. The following observations seemed to support these impressions. In immediate situations when children sometimes became anxious in anticipation of failure, became frustrated with learning tasks, and drifted from involvement in learning processes, teacher C1 changed her instructional practices in an apparent attempt to meet these impending needs. In some instances, she followed tasks with children to successful completion. Sometimes she gave additional assistance, then shifted responsibility for completion to the children. In still other instances, she removed children from the problem-solving situation until frustrations and anxieties subsided. Yet, in contrast to teacher A, such techniques did not appear to be totally guided by immediate behaviors of the children. Instructional practices of this teacher seemed to be conceived also in anticipation of learning and behavior styles of children. These kinds of strategies seemed to be largely effective in motivating children to participate in learning situations and in sustaining their interests.

In terms of specific classroom techniques, instructional practices relating to the establishment of predispositions for learning were manifested in some of the following ways. For example, in direct instructional situations, teacher C1 reviewed or introduced information to children which was germane to immediate problem-solving tasks. Until she was fairly certain that such information was secure, children were not left to recall pertinent skills or knowledge which might or might not have been retained. Second, rather than presenting tasks to children with little rationale for their requirement, she often spelled out reasons for accomplishment. Such explanations were simply stated; yet they seemed sufficient to provide encouragement for a number of children to engage actively in learning processes. Perhaps because they were particularly sensitive to individual levels of understanding and emotional states of children, they appeared much more effective in reaching children than teacher assertions of task importance. Third, at the commencement of lessons with certain children in whom resistances and frustrations more frequently arose, the teacher sometimes verbalized awarenesses of their feelings and attitudes. For some children, such periodic discussions of difficulties seemed helpful in releasing tensions before pressures mounted to an excessive degree. Fourth, directions were explicitly spelled out to children in terms of their requirements and processes for successful completion; further, they were frequently reinterpreted or demonstrated to children who appeared not to understand. This technique, like the aforementioned strategies, seemed to be conducive to lessening psychological burdens which a number of children often carried to learning situations. Their long-term effectiveness seemed to be evident in the observation that over the course of the year the majority of children in this class displayed fewer concerns about their learning difficulties.

In more independent activities, instructional practices of teacher C1 were also characterized by provisions which appeared directed toward similar objectives of minimizing failure experiences and facilitating performance on a more comfortable level. To an extent, manipulative learning aids were provided for individual children. Semi-independent activities where children were free to explore and share a variety of experiences were frequently observed; e.g., the children built a store and "play acted" different characters. Such involvements seemed beneficial in providing settings where all children could and did want to participate. Again, they markedly differed from more controlled experiences of children observed in classes B1 and B2 who were placed under considerably more pressure in preparing performances for large nonschool groups. Finally, like teacher B2, teacher C1 made herself available to children during independent activities and also, on a limited basis, encouraged children to seek assistance from one another.

The aforementioned strategies relating to the establishment of predispositions for learning comprised one major source in kindling and sustaining desires of children to learn. Instructional practices centering on another aspect of task presentations of teacher C1 also contributed to these motivations. These instructional practices were concerned with appropriate pacing of tasks. In particular, independent and directed instruction in this class exceeded periods of time no longer than 25 to 30 minutes in duration; also, children were engaged in a wide variety of different kinds of learning tasks daily. These kinds of techniques seemed helpful in sustaining attentiveness of children, as much as possible, throughout the mainstream of class activity. Indeed, it was significant that despite their periodic moments of distractibility and dissociation from learning processes and social interactions, children in this class infrequently appeared to be totally isolated from contact with their peers or the teacher.

In essence, task presentations of teacher C1, like her interactions, were characterized by a serenity, stability, and child-oriented supportiveness, which seemed immensely beneficial to individual children in effecting gradual, yet apparently meaningful change.

In the preceding section on teacher-child interactions, behavior of teacher C2 was characterized as being largely impervious to psychological needs of children. In light of the observation that a major portion of teaching in this class occurred within a setting of extreme confusion, strategies of task presentation seemed to follow similar patterns of insensitivity. Instructional practices observed in this class consisted primarily of: (a) assigning pages for completion where children were subsequently left with no follow-up of tasks; (b) listening to answers or oral reading of children where she occasionally confirmed correctness of responses but more often was concerned principally with behavioral disturbances of other children or youngsters standing beside her desk who needed assistance; (c) wide extremes of tolerance with different children in direct instructional situations; (d) no discernible efforts to sustain children through their anxieties and frustrations with learning, which often were disregarded or augmented with some children; (e) prolonged periods of independent activity which were varied only with participation of children in recess, lunch, or special subject periods; and (f) little evidence of awarenesses of how to guide and shape learning of children in direct instructional situations; children were left to their own resources for drawing conclusions and discerning relevant conceptions.

As pointed out earlier, observations of paramount resistance of children and prevalent emotional outbursts, neither as consistent nor as widely apparent in other classes, seemed to mirror these kinds of instructional practices. Further, perhaps equally important as the occurrences of such behaviors, there were apparently minimal awarenesses by this teacher that learning is exceedingly more complex than simply presenting children with books, paper, and pencils and expecting them to assume full burdens of grasping knowledge. Teacher C2 did seem to recognize that learning was not progressing in a comfortable way; for throughout the first year she was evidently dissatisfied and irritated with class events. At the same time, however, beyond that point of insight she did not seem to know how she could change her behavior or that of her children.

Observations of task presentations of teacher D revealed instructional practices which were characterized by less consistently uniform patterns of response to children. In large part, her sensitivity seemed to vary with responsiveness of children in learning situations. Specifically, when children were more open to learning, teacher D presented tasks in ways which seemed to be more supportive to learning difficulties. She encouraged freer participation of children, was considerably more attentive to their misconceptions, more carefully followed children through sequences of steps toward understanding various concepts and thus, to a greater extent, engaged in a dialogue of learning with children. In such situations she appeared to reveal a good deal of knowledge about and competency in motivating children to learn. On the other hand, when children drifted from tasks at hand, became frustrated, and refused to participate in response to her instruction, more supportive teaching strategies deteriorated, the temper of teaching-learning situations was drastically changed, and lessons were either terminated abruptly or carried to excessively long periods of time. Thus, on these less frequent occasions, her instructional practices more closely resembled those of some other teachers where learning in children was poorly monitored with insufficient guidance, assistance, and follow-up.

Like teacher B2, however, task presentations of teacher D differed in one essential way from those of teachers where instructional practices consistently seemed to be nonsupportive to children; in certain situations or with different children, both of these teachers were highly sensitive to many aspects of this second dimension of teacher behavior. The point is important to understanding why teachers behaved in more or less supportive ways with children; i.e., how the dynamics of teacher characteristics and class events affect instructional practices. In view of the fact that teacher evaluations of the present study have been severely critical of certain instructional practices, perhaps the point warrants restatement: Certain situations, more than others, tend to enhance positive behaviors of teachers; further, some teachers who are able to function in largely beneficial ways with most children may become much less effective in situations which they perceive to be personally threatening. This observation was not unique to the first-year teachers; it was recurringly apparent in classes in the second year. The real tragedy of such circumstances lies in the reality that teachers and children who suffer such turmoil may not be afforded relief of change within many existing public school special education programs.

In summary, the previous section has been devoted to an examination of some ways in which first-year teachers presented learning tasks to children. Although these instructional practices varied across and within classes, they tended to be largely consonant with respective teacher styles of interaction with children. The principal exception to this similarity between the two dimensions of teacher behavior was observed in class A where instructional practices of the teacher did not include a number of the criteria defining the dimension of task presentation yet where interactions were highly supportive to psychological needs and interests of children in learning were clearly evident. In the main, however, it did appear that strategies of task presentation were quite likely to change in accordance with the character of interaction.

3. Task selections, the third frame of reference conceived for evaluation of instructional practices, included two major points of consideration; i.e., the extent to which teachers selected tasks in accordance with (a) intellectual strengths and weaknesses of children, and (b) observable classroom behaviors of children that

appeared to be relevant to individual styles of learning. This dimension of instructional practices was considerably less variable among the six classes than either teacher-child interactions or task presentations. Because teacher characteristics were quite similar, this section will present observations in more general terms than prior discussions of instructional practices and teacher behaviors. In addition, exceptions to these commonalities will be considered.

Among the six teachers, the following characteristics of task selections relating to intellectual strengths and weaknesses of children were predominant.

(a) Teachers focused tasks primarily on enhancement of various academic skills rather than on development of more fundamental learning abilities.

(b) Teachers did not appear to conceive of tasks specifically in accordance with learning strengths and weaknesses of children. For example, although children may have displayed extreme difficulty in accomplishment of certain tasks, alternate forms or sequences of knowledge were seldom pursued.

(c) With the exception of instructional practices of teacher B2, multisensory approaches to learning were seldom observed.

(d) Teachers graduated levels of task difficulty; yet such differentiations infrequently revealed provisions of greater to lesser numbers of problem-solving aids in accordance with progressions of learning and intellectual development.

(e) The majority of teachers did not present discrete learning tasks to children. Commonly observed lessons and assignments included multiple steps toward accomplishment of specific requirements.

(f) Some teachers were extremely structured in terms of the kinds of accomplishments which they required of children; other teachers revealed little order to the form and sequence of knowledge presented to children.

(g) Although sequences of tasks observed in some classes did reveal planning of steps leading to meaningful educational objectives, such practices were not cast in terms of considerations of specific strengths and weaknesses of children. This observation is not intended to imply that children in these classes were not learning but that instruction had a different orientation. In other classes, educational objectives underlying various requirements were less clearly discernible.

(h) Finally, while lesson direction and explanation of teachers B2, C1, and D more closely approximated presentations in light of learning disabilities and stages of intellectual development of children, the other three teachers were less sensitive to such considerations; e.g., language impairments.

In essence, it appeared that some teachers were extremely aware that children were not functioning in accordance with academic expectancy levels and were quite competent in developing strategies for teaching different skills. At the same time, however, instruction of both these teachers and others who displayed less effective practices was not conceived primarily in terms of individual styles of learning. On the basis of frequent teacher discussions and classroom observations, this more general approach appeared to be contingent on some of the following factors:

(a) From classroom performances of children, teachers did not know how to ascertain specific learning strengths and weaknesses of children beyond a recognition that they were unable to function well in certain academic subjects. In part, the observation that learning tasks were not broken down more specifically seemed to substantiate this point.

(b) Teachers seemed to perceive that teaching in accordance with specific learning styles of children would impose greater demands of time, preparation, and organization on already heavy burdens of classroom instruction. Such assumptions probably were quite accurate insofar as initial stages of development were concerned. However, in a broader perspective, this kind of approach should have lessened requirements of children, hopefully functioning on more comfortable ability levels.

(c) Although they recognized that children in their classes had special kinds of psychological needs, all of the teachers seemed to conceive that children were not learning in meaningful ways unless instruction was cast specifically in terms of academic subjects.

(d) Even if they had known how to identify specific learning strengths and weaknesses of children, most of the teachers appeared to have little conception of how to apply various remediation techniques.

(e) Although each of the six teachers varied somewhat in relation to the above considerations, the observation that they all held quite similar views seemed to lend some support to this conception: In addition to the dimensions of teacher-child interactions and task presentations, task selections of teachers also reflected, to some greater or lesser degrees, certain teacher orientations toward children placed in such public school educable special classes.

Despite this more general approach, the observation that certain teachers displayed technological competencies in instructing children should not be minimized. In particular, in classes B2, C1, and, to some lesser degree, class D, tasks did appear to be more effective in communicating various skills. These higher levels of teacher competency appeared to be manifested in terms of closer approximations between academic requirements of children and their general levels of intellectual functioning and achievement. In addition to personal teacher abilities to conceive of such tasks, these approximations also involved equally important perceptive observations of children.

Observations of instructional practices concerning the second aspect of task selections reflected teacher approaches similar to those discussed above. More specifically, while some teachers were highly sensitive to anxieties and low levels of tolerance for learning, others revealed much less awareness of the significance of such child responses. Among those who did recognize, to varying degrees, the importance of these psychological needs were teachers A, B2, C1, and D. Yet, with the exception of B2, even these more supportive teachers did not employ techniques which indicated their awarenesses of frequent relationships between certain behavioral manifestations of children and specific learning disabilities, or further, knowledge of possible remediation strategies. In other words, it appeared that they were generally sensitive to behaviors of the children; but they seldom viewed problems in terms of specific learning disabilities.

The following examples are conceived to illustrate this point. With the exception of teacher A, who less effectively provided success experiences, teachers B2, C1, and D did attempt to follow most children in their classes to satisfactory accomplishment of tasks. Yet, none of these teachers revealed evidence of such strategies as the use of less visually distracting materials where behavioral manifestations of children indicated need for such modifications. With the exception of teacher B2, none attempted to employ techniques for "screening out" distracting visual or auditory stimuli. They did not alter the focuses of their particular approaches in accordance with especially low tolerance levels of children relating to specific intellectual functions; e.g., a concentration on visual rather than auditory learning. In some instances varying behavioral manifestations of children might not have warranted especially different teaching strategies; however, in others, modifications might have been immensely helpful; e.g., the minimization of distracting stimuli for some children.

In conclusion, it has not been an intent of this section on task selections to imply that, as a result of the conspicuous absence of many strategies defining this third dimension of instructional practices, learning did not occur. Most assuredly, over the course of the first year, many children did change in gainful ways. On the other hand, if these teachers had focused instruction more directly on behavioral and performance manifestations of specific learning abilities, they might have helped children in their respective classes to grow in knowledge which was more personally relevant to their own individual needs.

4. The fourth and last dimension under consideration in this section on descriptions of specific teacher characteristics is the organization of class instruction. The dimension is concerned primarily with the extent to which teachers were able to organize and coordinate ways for meeting individual needs of children within the context of teaching and interacting with several children in a classroom situation. It was conceived to be an extremely important aspect of instruction in that some teachers may be highly supportive to individual children, yet much less adequate in coping with several or large groups of children. Again, because certain strategies defining this dimension of teaching were employed to a minimal degree in some classes, observations will be discussed in more general terms, with some consideration of individual differences among teachers.

The first year these general characteristics were evident.

(a) A majority of the teachers did not clearly distinguish between instructional and functional levels in their teaching. Moreover, there was little consideration of demands imposed on specific learning disabilities by tasks which were conceived for independent accomplishment. As an apparent result in some classes, teachers were interrupted recurringly by children who were unable to accomplish tasks which were assigned for independent activities.

(b) In classes where teachers did allot specific periods for reviewing, checking, and clarifying understanding of assignments, instruction seemed to be more organized for children and the teachers. This strategy was not intended to imply need for adherence to inflexible schedules which seemed to be especially predominant in class B1. Yet, in situations where demands on teacher direction were heavy, children as well as teachers seemed to need periodic moments for reassessing accomplishment. Where such strategies were not employed (classes C2, D, and, to some degree, class A), teaching-learning processes tended to be less tranquil, sometimes chaotic; and there appeared to be marked increase in demands of children.

(c) In particular relation to classes A, C2, and D, teachers failed to coordinate effectively durations of individual instruction with periods of independent activity. As a result, children often expended long periods of time waiting for teacher direction. Such occurrences tended to precipitate behavioral difficulties which, particularly in classes C2 and D, not infrequently led to total class disruption when several children were left unattended.

(d) As noted above, variation of activity appeared to be especially important for sustaining active interest of children in learning. In four classes, A, B1, C2, and D, activities were extended over considerable periods of time without a great deal of variation.

(e) In two classes, B2 and C1, teachers did plan physical placements of certain children who were less liable to function well in close proximity with certain other children in both independent and direct instructional activities. Further, especially in class C1 and, to some lesser degree, in class B2, activities were preplanned for those children whose levels of tolerance for learning situations were low. Such strategies, again, appeared to be indicative of perceptive observations of teachers who were able to anticipate learning and emotional difficulties of their children and, further, to incorporate such awareness into their instruction. These techniques differed considerably from practices observed in some of the other classes where children were frequently directed to use puzzles, play games, or draw pictures because teachers were occupied with other groups of children. Such activities may provide important learning experiences; yet, when used to an excess daily, they do appear to lose some value.

(f) In none of the classes did teachers utilize the strategy of giving children responsibility for following their own sequences of daily activities from individually prepared cards. With a large number of children, such practices would have been inappropriate; for they would have been unable to read directions and/or probably would have become confused in attempting to follow these kinds of sequences. This latter observation was confirmed, in part, in those classes where teachers presented several oral directions to children; and subsequently, work was left uncompleted. Among several possibilities of explanations for such child behaviors were their difficulties in recalling sequences of more than three assignments.

In classes B1 and B2, teachers did write daily assignments on the board for groups of children. Such practices in class B2 seemed to be more effective than those in class B1 because children in the former class were better able to cope with these responsibilities. Also, activities in class B2 were varied to a much greater degree.

In summary, while most of the teachers did include some aspects of this last central dimension in their instructional practices, observations revealed that teachers B2 and C1 were consistently employed these kinds of strategies. In contrast, teacher C2 demonstrated little evidence of planned organization of class instruction; in that setting, neither children nor the teacher seemed to be coping near satisfaction in their learning experiences. Class D was another setting which represented some important considerations. In particular, despite the observation that teacher D was highly supportive to individual children and usually sensitive and competent with groups of four or five children, class disruptions did appear to arise sometimes from inadequate provisions for organization of class instruction. In turn, such difficulties affected her responsiveness to all children; and the climate of instruction tended to become much less conducive to learning. In class A, similar kinds of provisions also were lacking; yet the teacher appeared to be more able to cope with inattentiveness of children and was not seriously disturbed by such behaviors. Finally, observations of class B1 seemed to emphasize this point: Inevitably, the dimension of instructional organization implies that in order to function effectively and comfortably, classes need learning and activity structure; however, it cannot be emphasized enough that such an organization must include flexibility and an openness to change. Without these characteristics, instructional practices become little more than excessive control and rigidity.

Summary and conclusions to first-year observations: Teacher uniquenesses, commonalities, and the relative importance of specific characteristics of effective classroom instruction. For the writer, who directly participated in weekly and bi-weekly observations of the six classes and, hopefully, for the reader, who has shared less directly in these experiences, there is little question that the settings represented unique, dynamic teaching-learning situations. Such variabilities were inevitable. Furthermore, they were extremely important to attaining this central objective of teaching: to facilitate positive psychological change in individual children. At the same time, however, if such observations are to afford any value beyond a presentation of extreme diversity and six different styles of teaching, it seems important to attempt to distinguish those commonalities of more sensitive behaviors of teachers.

Criteria discussed at the commencement of the present chapter were intended to provide the reader with some orientation toward the writer's conception of essentials of effective classroom instruction. Obviously, teachers in this study the first year whose instructional behaviors variously reflected greater numbers of these guidelines have been characterized as being more highly sensitive to individual psychological needs of children. Yet, it should be clear, too, that even the more sensitive teachers, under the best of circumstances, did not always meet all of these specifications. Changing classroom situations and problems of children precluded such eventualities. Further, such stringent requirements likely would establish objectives seriously delimiting qualification of many teachers as exhibiting supportive characteristics. Too, they would largely neglect significance of effective classroom strategies of teachers who generally are less supportive to children or the importance of "breakthroughs" with children which occur in the absence of such criteria.

In the writer's experience of first-year observations, these commonalities seemed to distinguish behaviors of those teachers who were more consistently supportive to children on all evaluative dimensions, B2 and C1, and behaviors of other teachers whenever they variously reflected desirable sensitivities.

(a) There was evidence of an openness and a sense of caring in interpersonal relationships with children. More than any one or combination of specific technological competencies, this characteristic was most fundamental to the effectiveness of classroom instruction.

(b) Teachers revealed evidence of abilities to anticipate behavioral and learning problems of children and were able to apply such insights to classroom interaction.

(c) Most task presentations and selections closely approximated either general and/or more specific levels of psychological functioning of children.

(d) Teachers were fairly flexible and able to adapt their own behaviors to the realities of most classroom events.

(e) The mainstream of class activities did have a structure.

(f) Teachers presented learning tasks which did have purpose; i.e., they were fairly relevant to individual needs of children.

It was perhaps an ironic state of affairs at the termination of the first year of clinical observations which had been substantially devoted to efforts of developing special remediation strategies that the writer arrived at this conclusion: Without the foundation of supportive relationships between teachers and their children, attempts to change teacher behavior in ways which would facilitate learning in children might be futile. This speculation remained to be examined during the course of the second year of this study.

Clinical Observations during the Second Year

From September 1969 to June 1970, 42 children remaining in the study participated in the remediation program. Recommendations for educational strategies were made to their respective teachers at the commencement of the academic year. Subsequently, classroom practices were supervised and observed on a weekly and bi-weekly basis for most of the remaining nine months. In light of massive reorganizations of classes, extensive teacher changes, placements of some children in radically different and unique class settings, and strong teacher reactions to the remediation program, the second year yielded class and teacher involvements of the writer which far exceeded initial expectations of demands of the remediation program. Also, these involvements provided data which considerably extended insights and speculations relating to teaching-learning processes of this small sample of children and their teachers.

To review briefly, in the original plan of the study, the six teachers who participated the first year were anticipated to remain in the same special class settings with the same children the second year. It was assumed that this approach would provide a basis for evaluation of the extent to which both teachers and children changed under the effects of the remediation program. At the close of the first year, however, it became clearly apparent that such expectations of the writer were grossly naive and unrealistic. Of the original 48 children in the study, only 20 remained in classes and schools attended the first year; of those 20 children, only eight remained full time with the same teachers. More specifically, these developments occurred: (a) two children moved out of state; (b) two children were dropped from the study, one as a result of incomplete test data, the second as a consequence of placement in a nonparticipating special class; (c) six children, either with or without support of tutoring and special assistance, were placed in regular second and third grades; (d) eight children were placed in a special setting where three teachers respectively taught perceptual, language, and reading skills; (e) only four of the original six teachers remained and five new teachers became involved in the study.

As a result of these modifications, the kinds of determinations of change, originally conceived at the inception of the study, were possible with only eight children and two teachers. Thus, clinical observations of the second year were based on two different class conditions: (a) one where children were observed with the same teacher over a continuous two-year period, and (b) another where children were observed with one or more different teachers during the course of the remediation program. With this latter group, there was no feasible way of discerning the extent to which behaviors of teachers and children were modified primarily as a result of the intervention program, with the exception of observations of growth during the second year. In this sense, the second class condition differed from that of the first year; for there was no extended basis of comparisons of change. At the same time, however, it was similar to first-year observations in that changes in children both years had to be viewed not only in terms of greater or lesser degrees of intervention effect but also with respect to the impact of those teachers directly interacting with children. As with all teacher- or clinician-directed remediation strategies, effects of this program did not exist in isolation from the context of relationships.

Like the preceding discussion, the following section on clinical observations during the second year will include two parts: (a) an overview of observations, and (b) descriptions of specific teacher characteristics in relation to the four dimensions of teacher behavior. Selections of data will vary somewhat from those presented in the first-year observations in that discussion of the four original teachers will be centered principally on considerations of change in their behavior. Instructional practices of the five teachers new to the study the second year will be described in greater detail.

An overview of observations. The second year these observations of teacher behavior and class occurrences were made.

1. While certain dimensions of behavior of the four teachers who remained in the study the first year did change considerably, others remained largely similar to characteristics of the first year. This tendency was consistent with all four teachers. More specifically, instructional practices relating to the dimensions of task selection and organization of class instruction revealed evidence of greatest change; task presentations were modified to lesser degrees; and teacher interactions with children, although somewhat different in various classes, closely resembled patterns of response of the first year.

2. Some teachers who faithfully utilized all recommended materials of the remediation program appeared to meet learning

needs of children far less effectively than other teachers who rarely employed these suggestions but were especially insightful about learning and emotional difficulties of children.

3. The second year behaviors of some children appeared to differ markedly from observations of the first year. Although these changes are recognized as functions of child variables, in many instances the consistencies with which they occurred seemed to reflect, also, different degrees of teacher sensitivity and/or changes in class settings. For example, these particular variations were apparent:

(a) In some special classes where children experienced new teachers whose instructional behaviors appeared less supportive to their needs, class behaviors and performances seemed to regress.

(b) In some situations where children were placed in different special classes which were characterized by highly supportive teacher practices, class behaviors and performances of children seemed to change in more positive directions.

(c) In the special class setting where three teachers interacted with eight children, behaviors and performances of those children consistently changed to extreme degrees with each of these teachers who were variously sensitive to individual psychological needs.

(d) Behaviors and performances of some children who were placed in the regular grades with additional support of highly sensitive teachers changed in substantially positive ways with respect to this observation. One might well postulate that the children were placed in the regular grades because they reflected greater potentialities for successful academic performances. Also, both class and teacher changes probably influenced directions of growth. While it is likely that all three sources accounted for evidences of substantial change in these children, the significance of that growth and the relative contributions of these variables need to be considered.

4. The extent to which each of the nine teachers appeared to grasp the rationale for and were able to implement suggested or similar kinds of remediation strategies varied considerably. Undeniably, the actuality of special remediation strategies in some classes was limited.

5. Behaviors of the five new teachers, similar to behaviors of the six teachers of the first year, represented a wide continuum of uniquenesses and also shared some important commonalities. In general, however, sensitivity and appropriateness of their behavior relating to each of the four evaluative dimensions seemed to be less divergent than characteristics of some of the first-year teachers. Stated in another way, the new second-year teachers appeared to be more consistent than some first-year teachers with

regard to the extent to which they did or did not meet criteria of the four frames of reference.

Patterns of the extent to which some first-year teachers met various criteria during the course of the remediation program did differ from prior characteristics; others remained largely unchanged.

Observations of both groups of teachers over the course of the second year seemed to support this point: While the remediation program, to a limited degree, did appear to have somewhat consistent effects on certain dimensions of teacher behavior, individual styles or patterns of instruction of teachers were quite stable.

6. Behaviors of some teachers seemed to change in more positive ways when certain children were transferred from their classes at the termination of the first year or were removed during the course of the second year.

7. Although varying among the nine teachers, in general, instructional practices were focused not only on highly verbal, academic skills but also on identified fundamental learning abilities of individual children. This observation was one manifestation of changes in teacher behaviors relating to the dimension of task selections.

8. Emotional outbursts of children continued to be evident

in several classes the second year. Similar to observations of the first year, in some classes these behaviors were limited to two or three children; in others, they appeared to be more widely prevalent. Over the course of the second year, enhancement or minimization of these manifestations in individual children seemed to be closely related to greater or lesser degrees of sensitivity of different teachers to such emotional difficulties.

9. To a considerably lesser degree than was apparent the first year, children engaged in such activities as talking, walking about classrooms, and gazing out windows. In classes where such manifestations were more prevalent, these behaviors again appeared to reflect inadequacies of certain aspects of instructional practices of some teachers.

10. While interactions of the four original teachers did not change substantially the second year with individual children of their first-year classes, new second-year teachers did behave in ways with other children which sometimes markedly differed from first-year teacher behaviors. This observation seemed to support, in part, the following contention: While certain behaviors of children may tend to elicit rather stable patterns of response in a particular teacher, these manifestations may be viewed quite differently by another teacher. As observations the second year also revealed, such changing perceptions of teachers may work either to

the advantage or the detriment of individual children.

11. To a considerably greater extent than those of the first year, individual practices of some teachers were more task- than lesson-oriented. This observation seemed to be a reflection of increased tendencies of some teachers to focus instruction more directly on particular learning abilities of children which, in turn, helped to clarify educational objectives.

12. To varying degrees, some teachers revealed evidence of grouping children for learning tasks on bases other than exclusive reliance on grade levels; e.g., grouping in accordance with different types and severities of learning disabilities.

13. Teacher-child interaction continued to be the most variable dimension of teacher behavior. At the same time, however, among several teachers there was a greater diversity of instructional practices relating to the other three evaluative dimensions than was apparent with the six original teachers.

14. Although to a lesser degree than the first year, some children continued the second year to reveal evidence of resistance to learning and a discontentment and frustration with placement in special classes. Again, these manifestations seemed to be more paramount in some classes where teacher behaviors were generally less supportive to learning and emotional needs of children.

In essence, these observations seemed to indicate that the remediation program had quite substantial effects in sensitizing teachers to varying specific learning abilities and in helping them to implement more appropriate teaching strategies in response to particular strengths and weaknesses of individual children. On the other hand, the program appeared to have a limited impact on fundamental ways in which teachers interacted with children. Although recommendations regarding this more basic aspect of teacher behavior did not specifically constitute part of the remediation program, it was anticipated that changes in instructional practices might also have some bearing on this teacher dimension. Only to a minimal extent was this expectation upheld.

The task of attempting to understand the dynamics of teacher behaviors with individual children became exceedingly complex the second year in light of extensive teacher, child, and class rearrangements and varying effects of the remediation program. In the overview of first-year observations, it was postulated that instructional practices ultimately were reflections of different personal characteristics of individual teachers; i.e., their attitudes, feelings, and perceptions about children and technological competencies. To summarize briefly, the four major points of interpretation advanced in that section included these considerations.

(a) Personal attitudes, feelings, and perceptions of teachers regarding particular children largely influenced their interactions and affected instructional practices with these children.

(b) Certain apparent attitudes of teachers concerning conditions of mental retardation adversely affected interactions and instructional practices with children in their classes.

(c) Ways in which teachers perceived classroom demands largely influenced their behavior with children.

(d) Technological competencies affected feelings of adequacy and comfort in teaching and interacting with children.

Further, it was contended that these kinds of factors were much more powerful determinants of teacher behavior than variables such as availability of special materials and equipment, actual class demands, sizes of class enrollment, or administrative freedom to implement innovative classroom strategies in teaching children. As stated previously, these variables did not appear to be related in any consistent pattern to degrees of teacher sensitivity.

While, in large part, these interpretations appeared to be directly relevant toward explaining teacher behavior observed the second year, the following points of qualification and clarification were also important.

1. Although changing technological competencies did not appear to have a universal effect on the general character of teacher-child interactions, positive modifications in instructional practices did seem to temper severities of child intolerance and discomfort of instruction of some teachers. In general, observations over the course of the second year revealed that teachers behaved in different ways with different children. Similar to first-year practices, in some classes these response differentiations seemed to arise from efforts of teachers to meet varying needs of children. In other classes, they appeared to provide few advantages for children; and not infrequently, such instructional practices seemed to be somewhat detrimental to psychological development.

In relation to teachers who tended to be less consistently sensitive to children, changes in some aspects of their instructional practices increasingly led to establishments of class structure and organization which became evident in several ways. For example, all children were exposed to at least minimal provisions for learning; activities were shorter in duration and more varied than first-year practices; and activities tended to be less frequently characterized by chaotic class disruptions. As a primary consequence of this kind of newly conceived order, demands of children, particularly in two classes, appeared to become less overt, exhausting, and frustration-provoking to teachers. Thus, their tolerance of individual children and relative degrees of comfort during processes of instruction seemed to be enhanced. In the presence of still largely evident insensitivities, these changes were no guarantee of adequate learning experiences for all children; yet, to a limited extent, they seemed to diminish the intensity and constancy of painful experiences of some children.

These changes in teacher behavior were not readily apparent until several weeks and, in some instances, months following commencement of the remediation program. The observation, however, was pertinent to both original teachers participating the first year and some of the new second-year teachers.

2. Over the course of the second year, several teachers appeared to maintain conceptions of varying capabilities of different children, which largely pervaded the character of interaction and task presentations with those children. This observation seemed to indicate that although most of the teachers increasingly applied instructional techniques in accordance with more specific learning needs, they still adhered to more generalized attitudes toward individual children.

Like the first year, these general perceptions appeared to work to the benefit of some children and to the disadvantage of others. In particular, if a teacher tended to view a child in more positive, self-enhancing ways, instructional practices and interactions seemed to be generally charged with a sense of personal worth of that child, whatever his strengths and weaknesses. Such a conception did not imply that teachers ignored problems of children. In fact, perhaps because they were more deeply sensitive to difficulties of children, they were able to conceive of ways of attempting to modify maladaptive behaviors. On the other hand, if a teacher tended to perceive only incapacities of a child, she was less likely to recognize possibilities or the importance of change, regardless of her employment of specific remediation strategies.

3. Behaviors of some children influenced teacher behavior in such substantial ways that when some of these children were removed from particular classes, there were discernible changes in instructional practices of the teachers. This observation was somewhat apparent the first year; however, over the course of the second year its significance was more dramatically revealed in comparative teacher changes. In particular, it helped to clarify this point: Although largely indeterminable in initial stages of consideration, there appeared to be substantial differences in approaches of teachers whose behaviors were more singularly influenced by one or two children and those of other teachers who were more generally unable to cope with total class demands.

The point may seem to be a bit remote; however, it was quite important in examining ways in which different teachers did change and evaluating factors apparently contributing to these modifications.

4. Technological competencies of some teachers which seemed to be entrenched in fundamental awarenesses of psychological needs of children extended far beyond preliminary diagnoses and recommendations for remediation of specific learning disabilities. In other words, for those teachers who tended to be more supportive to needs of individual children, diagnostic information appeared to serve a primary function of sharpening and reorienting their already existent awarenesses. Subsequent to initial recommendations, they frequently developed their own innovative approaches to teaching children.

In contrast, teachers whose instructional practices appeared to be less guided by a specific direction to educational objectives and underlying sensitivities to children seemed to be more chiefly reliant on suggested materials. Moreover, they tended to be much less sensitive to behavioral manifestations of learning disabilities. For example, they rarely displayed efforts to cut down distractibilities of children.

5. In the discussion on interpretations of first-year observations, the contention was advanced that sizes of class enrollment did not appear to be consistently related to greater or

lesser degrees of teacher sensitivity or evidence of technological competencies. Although enrollments in various class settings ranged from three to 16 children, this position still seemed to be upheld the second year. At the same time, however, two different special settings in one community, conceived the second year as part of a school effort to develop innovative approaches to teaching learning disabled children, emphasized the importance of alternative possibilities to self-contained special classrooms. More specifically, in limiting learning situations to participation of only a few children within short periods of time, heavy burdens of class organization can be considerably lightened. Second, if appropriately coordinated, individual concentration of instruction on specific learning abilities and skills by three or four teachers may allow for more intensive remediation attempts.

Neither of these potentialities was realized to a near satisfactory degree in the special setting where three teachers were involved in a team effort; for their sensitivities to children and competencies in teaching were widely divergent. The tutorial setting where one teacher provided special assistance for three children, in process of transition to the regular grades, did allow for substantial blocks of direct, daily instruction which seemed to be highly supportive to their varying needs.

6. Finally, for several teachers the psychological climate of self-contained special classes and personal awarenesses of frequent administrative consequences of child placement seemed to bear in ways on their attitudes and feelings which were always conducive to their individual growth or hopeful anticipations for children. This observation certainly was not exclusive to the second year as a direct result of the remediation program; however, it became more clearly apparent with repeated consistencies and increasing awarenesses of some teachers of change in children.

In particular, psychological effects of special classes appeared to be manifested in some of the following ways. First, either during or at the termination of the second year, some teachers made recommendations for placement of certain children in the regular grades. In a few instances, such recommendations were sustained; and teachers seemed to experience a tremendous sense of personal accomplishment. On the other hand, when these recommendations more frequently were rejected or substantial administrative resistance was posed, they seemed to share with their children the inextricable burdens of special class placement. Under the best of circumstances, one could not reasonably expect that positive action would be taken on all suggestions. Yet, the consistency with which rejections generally occurred in two communities and were occasionally observed in the other two seemed to indicate this strong probability: Although children might change in sufficient ways to cope adequately with academic requirements in the regular grades, they might be refused placement because of resistance of regular class teachers and/or administrative personnel. Thus, teachers in this study were confronted with the realization that they, as well as children in their classes, were part of a system which, all too often, was reluctant to respond to needs of children termed "mentally retarded" beyond mere provision of physical facilities.

As a second consequence of such awarenesses, some special class teachers were understandably reticent to allow their children to participate in activities or attend classes in the regular grades. They feared that the children might not be able to cope socially or academically with demands; and, rejected by regular class teachers, they might eventually be returned to the special classes with greater adjustments to overcome. From observations of the second year where certain children were placed in the regular grades, it did appear that, again, acceptance or rejection of children ultimately was contingent on supportiveness and personal attitudes of individual teachers. Thus, in part, some of these concerns of special class teachers were accurately founded and, further, were quite realistic in the assumption that most children would require some kind of supportive assistance in transfer to the regular grades.

Third, it seemed that often some of the teachers felt isolated and frustrated in making decisions about children, for they frequently lacked sustaining support in acquiring additional therapeutic services. Moreover, although all but two of the nine classes the second year were based in public schools, they were largely divorced from the mainstream of school activity and administrative resources. As indicated above, in many instances, teachers essentially found themselves without the authority to effect meaningful change in programs for children, save their own classroom activities.

Fourth and last, for those teachers who needed or wanted aid in changing their own behavior, there was often little apparent recourse for obtaining new direction. Either they and the children endured their varying problems alone; or teachers, unable to cope with demands, left their positions. To a limited extent, this lack of assistance seemed to arise from an absence of administrative concern for such problems. However, frequent discussions with directors of special education in three of the four communities indicated this more primary source of such circumstances; i.e., they were reflections of the tremendous enormity and complexity of efforts to change teacher behavior in substantial and enduring ways.

Again, this last observation, like the preceding issues, was not unique to the second year of the study. Yet, with both teachers and their respective directors of special education, this consideration appeared to be somewhat more paramount because the major focus of the second year was centered on attempts to incur change. Too, in a very real sense, several teachers, at least initially, found themselves in "crisis situations" as a direct result of different instructional expectations, newly conceived special settings, and first-year teaching experiences.

In the least, there were no easy solutions to problems such as those recounted in the sixth point of interpretation. The issues extended much beyond the scope of influence of the present study and, in the broadest sense, sometimes even beyond the realm of control of special education departments. Nevertheless, these considerations are conceived to be of vital concern to any researcher who attempts to effect change within the mainstream of public school education; for, in the final analysis, attitudes of teachers, administrators, and children themselves may be as equally powerful as, if not more determinant than, the specific impact of any remediation program.

Summary and conclusions to overview of second-year observations. The preceding overview of second-year observations has had two major purposes. The first was a description, in general terms, of teacher behaviors during the course of the remediation program. The second was an examination of teacher characteristics and related factors which seemed to bear on teacher behaviors. In particular, the dynamics of teacher behavior were considered briefly in the light of apparent effects of: (a) teacher attitudes, feelings, perceptions, and technological competencies; (b) the remediation program; (c) variables which were unique to second-year instructional situations such as different special settings; and (d) the psychological climate of self-contained special classes. Insofar as the relative impact of these variables is concerned, this major point was stressed: While the remediation program appeared to have fairly consistent effects on certain aspects of instructional practices of the nine teachers, these changes were largely influenced by more primary determinants such as personal attitudes and actions of teachers, children, and school administrators.

In conclusion, one additional observation of teachers is important; i.e., to open themselves and their classrooms to close scrutiny and constant suggestions for change required personal risks for all of these teachers which not only provided variously recognized opportunities for growth but also involved, at times, a great deal of uncertainty, discomfort, and pain. This observation was clearly apparent where needs for supervision, advice, and reassurance were predominantly evident during initial stages of the remediation program and, for some teachers, lingered throughout the greater part of the year. In the least, meaningful change did not come easily. For some teachers, it meant challenging ways of interacting with and instructing children which had become stabilized over several years of classroom teaching. For others in their initial stages of teaching experience, it raised further doubts and questions about yet uncertain courses of classroom action. Too, there were the added tensions incurred by the frequent presence of the writer, who had made certain recommendations. Although they were reassured that it was impossible to incorporate all of these suggestions into every daily lesson, several teachers seemed to be constantly aware of expectations and expressed feelings of guilt when classroom problems arose or they did not include certain recommended tasks in observed lessons. In view of the fact that initial recommendations were quite extensive and undoubtedly somewhat overwhelming, these reactions were not surprising. Thus, although previously teachers had expressed varying degrees of interest in developing different strategies for teaching children in their classes, the final reality and responsibility of this process appeared to be viewed by the majority with considerable reticence and apprehension. For most of the teachers, such feelings of uncertainty seemed to subside with the passage of time and increasing familiarity with various remediation strategies. However, in the final analysis of the second-year observations, feelings and attitudes of teachers toward requirements of the remediation program constituted an added and significant dimension of impact in determining behaviors of the teachers.

Frames of reference, guidelines, and specific teacher characteristics. Like the preceding section on first-year clinical observations, the following discussion will be concerned with descriptions of specific characteristics of teacher behaviors in terms of the four frames of reference and corresponding criteria for evaluation. The section will include: (a) descriptions of behavior of the four original first-year teachers (B2, C1, C2, and D), which will be focused primarily on ways of interacting with children and instructional practices representing departures from first-year observations; and (b) somewhat more extensive descriptions of the five teachers who participated only the second year of the study (A2, C3, C4, C5, and D2). Discussion of these second-year observations will be followed by two final sections of this chapter; i.e., Considerations of Change in Teachers, Their Classes, and Educational Strategies; and The Hidden Handicap: Attitudes Toward Children and Their Implications. They will constitute the summarizing and concluding statements on the first- and second-year observations.

The ensuing discussion will present observations of changes in behaviors of the four remaining first-year teachers with respect to teacher-child interactions, task presentations, task selections, and the organization of class instruction.

1. At the commencement of the current section on second-year clinical observations, it was pointed out that behaviors of teachers relating to certain dimensions appeared to change more than others. With respect to that continuum, characteristic ways in which teachers interacted with children in their classes revealed evidence of least modification. This observation was fairly consistent with teachers B2, C1, C2, and D, each of whom maintained quite different styles of interaction with children.

Despite her rather severe difficulties of communication with a few adolescent boys the first year, teacher B2 was quite supportive in her interactions with the majority of children in her class. Observations the second year disclosed that in response to a largely different group of children, most of whom were transferred from class B1, this teacher similarly revealed a high degree of sensitivity. Moreover, in contrast to the first year, her supportive behaviors were consistently displayed in relation to all children; the wide variation in her degree of sensitivity with different children was no longer evident. As a result, such behaviors as severe criticism and verbal derogations, cursory demands, and punishments by denial of privileges, consistently observed in response to particular children the first year, were almost totally absent throughout the second year. Further, whenever such responses did arise, they did not appear to be directed repeatedly toward the same children. In general, despite the continuing large class enrollment of 16 children and the added burdens of the remediation program which raised some concern throughout the year, teacher B2 created an environment for learning which seemed to be highly conducive to both emotional and cognitive growth in children.

Similar to the first year, teacher B2 continued to exercise control over certain aspects of behavior of the children and still adhered to some fixed rules and regulations such as absolute quiet passing to and from classes. At the same time, however, it was apparent that these behavioral limitations and controls were not nearly as demanding as her requirements of the first year. Too, personal tensions and feelings of inadequacy, recurringly aroused the first year by behaviors of certain children, were rarely observed the second year.

In large part, these changes in the character of teacher-child interactions in class B2 seemed to be attributable to some of the following factors. First, at the termination of the first year all of the boys who had been such constant sources of turmoil for teacher B2 were transferred from her class. Older children who remained the second year had posed no problem the first year;

interactions with these students had always been highly positive. Second, at the close of the first year six children of class B1 were transferred on a full-time basis to class B2. Also, three children were given part-time instruction beginning October of the second year when the newly hired teacher of class B1 resigned. Likewise with these nine children, teacher B2 interacted in highly sensitive and self-enhancing ways. Third, despite the observation that she was somewhat concerned about requirements of the remediation program, she seemed to be well aware that the children were changing in positive directions and that these changes were being facilitated, to a considerable degree, by her competent instructional practices. Finally, it seemed that the frequent presence of the writer, with whom learning and emotional problems could be freely discussed, and easing tensions between this teacher and administrative personnel provided some encouragement that she was not alone and that her contributions were recognized and appreciated. This feeling had been largely stifled the first year when both she and administrative personnel seemed to reach an impasse in discussing acute classroom problems of and plans for the older boys with whom she had experienced extreme frustration. Essentially, it appeared that class and administrative circumstances of the second year were considerably more supportive to her needs for reassurance and a fairly controlled class structure and thus further enhanced already evident sensitivities to children.

Interest in and enthusiasm for learning displayed by children of class B2 again seemed to reflect the supportive character of this teacher's interactions, as well as her high degree of competency in teaching. Such responses were especially important in view of first-year observations that many children of class B1 had appeared to lack affect, were largely uncommunicative within the classroom situation, and rarely displayed an open enthusiasm for learning tasks. Changes in behaviors of these children, observed in both formal instructional situations and less structured settings, exemplified substantial departures from prior occurrences.

First-year observations of teacher C1 revealed a style of interaction with children which was considerably less controlling and more generally sensitive to all children in her class than that of teacher B2. Second-year observations disclosed that teacher C1 continued to maintain similar patterns of general response sensitivity to children within a team-teaching situation where classes of seven or eight children were rotated every 20 to 25 minutes. In light of the fact that this kind of approach constituted a radically different instructional setting which inevitably had its limitations as well as its assets, specific reactions of this teacher to the new situation warrants careful consideration.

The following concerns of teacher C1 were paramount. First, while the team-teaching approach importantly allowed for increased concentration of effort on specific learning difficulties of children, it had a potentiality of imposing substantial control on certain aspects of individual teacher freedom. This point was one of her strongest reservations regarding the setting. Her feeling was quite understandable in view of the observation that although her class activities reflected a good deal of advanced planning, she was extremely flexible with the children during the course of activities and was especially responsive to frequent problems of children, which were far from bound to specific time limits. In large part a result of the lack of coordination of effort among the three teachers participating in the setting, difficulties posed by inappropriate timing did frequently arise. For example, often learning activities and teacher discussions were interrupted by groups of children whose class changes were poorly monitored. However, despite these unsettling circumstances which were recurringly apparent throughout the second year, teacher C1 still managed to follow pending emotional and learning difficulties of children to comfortable resolutions by the close of most class sessions.

A second point at issue raised by teacher C1 was this: Would limited periods of daily encounters provide sufficient opportunities for developing strong positive relationships with children which were critical to meaningful changes in cognitive performance and affective behavior? First-year observations had disclosed that less structured situations such as language lessons, recess periods, and morning and afternoon discussions prior to and after school hours had constituted important occasions for sharing thoughts and gaining insight about children in class C1. These planned freer periods with children were somewhat curtailed the second year; however, a significant turn of events, again apparently reflective of the high degree of sensitivity of this teacher, was observed. Specifically, during recess and rest periods and at the close of school, children voluntarily sought opportunities for talking with teacher C1 and continuing certain learning tasks. With the other two teachers, such behaviors of children were not in evidence; in fact, repeatedly children asked to leave classes C2 and C3 in order to be with teacher C1. This observation was generally consistent among the majority of 48 children engaged in the new setting the second year. Thus, it appeared that despite the strong possibility of such a development, interactions between teacher C1 and children in her classes were not adversely influenced as a function of this setting. Relationships continued to be enhanced by more important determinants such as teacher attitudes.

Third and last, teacher C1 raised the question of whether she and her colleagues would be able to maintain a sufficient degree of consistency among themselves in terms of the ways in which they behaved with children and implemented various instructional tasks. Observations over the course of the year disclosed that this point of concern was well justified, for they displayed very little continuity among their various endeavors to facilitate change in children. In view of the wide diversities in behaviors of teachers observed the first year, this eventuality was not especially surprising. At the same time, it did seem that at least some degree of unanimity among the teachers was requisite to an attainment of beneficial effects within this kind of educational setting. As was evident the second year, learning in the absence of such a consistency tended to be confusing for some children.

Although these three issues and uncertainties about the format of the special setting, still in an early stage of conceptualization at the beginning of the school year, initially caused considerable anxiety, such concerns of teacher C1 appeared to become less paramount over time. By the close of the academic year, she had largely overcome most of these obstacles. Similar to the first year, she was functioning in highly effective ways with all children within the structure of this setting and, essentially, met all of the criteria of the first dimension of teacher behavior.

Teacher C2, also continuing in the study the second year, likewise participated in the team-teaching situation. In accordance with first-year observations, ways in which she had interacted with children were generally characterized as conspicuously lacking sensitivity to psychological needs of most children in her class. Revealing frequent emotional outbursts of children and substantial resistances to learning, her class had appeared to be the most chaotic of the six first-year settings. The second year, a similar lack of supportiveness was widely and consistently apparent with the larger number of children in the team setting. However, some changes in her behavior were evident. In particular, although she continued to criticize individual children, with little sensitivity to the time and setting of such verbal derogations, the severity of these beratements in class seemed to be slightly tempered in comparison to first-year observations. Second, within the highly structured class setting that required instruction of fewer children over shorter periods of time, she did provide some opportunities for peer interaction. Children were allowed to participate in learning activities together with less yelling and stifling teacher control. Third, during the course of teacher-directed instruction, teacher C2 seemed to be somewhat more attentive to the presence of individual children and appeared to become less irritated when they were having difficulty grasping various concepts. Former preoccupations with behavioral problems, commonly observed the first year, were still heavily centered on specific children; yet to a greater degree such outbursts between children and the teacher were focused on events occurring during free play activities of the special program, which were located at the back of her room. Finally, to a far greater extent than the first year, all children were afforded an opportunity for direct teacher instruction; specific individuals less frequently were left without involvement in some class activity.

In response to such changes in teacher-child interactions and other modifications of instructional practices, behaviors of children in these rotating groups did seem to differ from more prevalent occurrences observed in class C2 the first year. In particular, children were less obviously confused, less constantly emotionally upset, and somewhat more tolerant of learning activities over the second year. To varying degrees, some changes in child behavior may have been reflections of effects of the newly conceived class setting. On the other hand, in light of concurrent modifications in teacher behavior, it seemed likely that teacher variables were more primary sources of behavioral differences of children.

As indicated earlier in the overview of second-year observations, such changes, exemplified by teacher C2, were no assurance that children would be aided in learning in more efficient ways. Although predominant ways in which she interacted with children seemed to be less disparaging the second year, teacher C2 still revealed little evidence of attempts to make decisive, positive advances toward relating to children in accordance with characteristics such as those indicated in the guidelines of the first dimension of teacher behavior. In large part, her attitudes remained unaltered; and these teacher characteristics were conceived to be fundamental to incurring important changes in children.

Like behaviors of the other three teachers remaining in the study the second year, patterns of interaction of teacher D also seemed to change only to a minimal degree. Moreover, burdens of responsibility of the remediation program appeared to weigh heavily on this teacher throughout the greater part of the second year. In contrast to teacher B2, she never did overcome these concerns to a point where she functioned comfortably and freely within the structure of the program. These additional anxieties did not markedly change characteristic ways in which she related to children. Yet, they did obviously increase already existing tensions, which she frequently verbalized, and thus may have contributed indirectly to her low levels of tolerance with children, also observed the second year.

In terms of more specific characteristics of teacher-child interactions revealed in class D the second year, the following observations were made. Although emotional disturbances of children were still apparent, they seemed to be somewhat diminished in comparison to first-year occurrences. To an extent, such changes in children, similar to class C2, seemed to be attributable to an increased class organization which was seriously lacking the first year. Thus, although children expended considerable amounts of time engaged in wandering about the room, playing in nonconstructive ways with materials and equipment, and disturbing one another, these kinds of manifestations did seem to be better controlled the second year. Such accomplishments were not easily achieved by teacher D; for initially, new children of the second year were extremely distractible and unable to focus on specific tasks for periods of any sustained duration. However, as the year progressed, they became increasingly able to function independently and to follow tasks to successful completion within limitations established by teacher D; e.g., they began to control impulsive responses such as calling aloud to the teacher for immediate assistance and were able to complete learning tasks within certain periods of time, with less movement about the classroom. For this teacher, who was easily disturbed by distractibilities, frustrations, and emotional outbursts of children, these changes in their behavior seemed to be crucial toward effecting any degree of comfort during processes of instruction. In essence, despite the observation that she seemed to be preoccupied to an excess with requirements of the remediation program, it appeared that ultimately recommendations did effect some positive change in both her behavior and that of the children.

Similar to other settings, there were substantial changes in the enrollment of children in class D the second year. Five children were transferred to a class of older children, and several younger children were newly placed. Observations of this teacher with a somewhat different group of children provided additional insights concerning reasonable expectancies for change in teacher-child interactions. Specifically, two considerations were paramount.

(a) Teacher D continued to display inconsistencies in her degree of response sensitivity to children, and these variations still appeared to be largely contingent on the receptivity of the children. In light of these observations, it seemed that behaviors which had uniquely characterized her style of interaction the first year remained quite stable.

(b) Just as behaviors of children consistently evoked certain responses from teacher D, her patterns of interaction seemed to precipitate repeatedly certain kinds of reactions from different children. In other words, despite changes in child behavior such as those described above, there was still considerable similarity between class events and behaviors of children observed the first and second years.

Both of these considerations seemed to add support to this conclusion relating to observations of each of the four teachers remaining in the study the second year: Although some changes in their styles of interaction with children were effected, dominant personal characteristics continued to obtain and did not seem liable to move in substantially different directions with the more primary concentration of the remediation program on changing instructional practices.

2. Observations of task presentations of the original four teachers, although still largely reflective of first-year instructional practices, did reveal greater degrees of change than behaviors relating to the dimension of teacher-child interactions. Recommendations for task presentations constituted a specific aspect of the remediation program.

Teacher B2, who had been extremely versatile the first year in applying various strategies to involve children and to maintain their interest in learning processes, continued to demonstrate a high degree of sensitivity with respect to this dimension of teacher behavior the second year. As recounted earlier in the description of first-year observations, her methods of task presentation with the majority of children in her class included most techniques designated in the guidelines for evaluation. Her task presentations the second year were characterized by similar strategies with the following modifications.

(a) She provided greater numbers of opportunities for children to engage in helping one another during the course of independent learning activities. Further, she designated working partners so that children knew in advance where they could obtain assistance. Not only was this strategy extremely effective in facilitating instructional processes with large numbers of children; it appeared to engender a great deal of enthusiasm during the course of participation and importantly contributed in enhancing a sense of responsibility and independence apart from teacher direction.

(b) No longer were lessons abruptly terminated or highly charged with emotional tensions of the first year, almost invariably observed during courses of instruction with certain students in her class. Controls and high levels of expectancy were still maintained the second year. Yet, similar to more sensitive patterns of teaching observed with the majority of children the first year, her behavior appeared to be highly supportive to learning.

(c) To an even greater extent than the first year, teacher B2 provided occasions for children to express themselves freely without the burdens of conforming to such restrictions as punctuation or spelling without error.

(d) She carefully guided thought processes in ways which seemed to be attuned specifically to varying abilities and rates of learning of individual children. This observation was made also the first year; however, during the course of the remediation program evidence of such techniques became even more paramount. They were exemplified by these kinds of practices. For example, in teaching new words, she did not simply present lists for rote memory. Children were aided in discriminating word patterns and constructing new, unfamiliar words. Moreover, during such processes individual children were given varying degrees of support in terms of provision of different clues toward problem-solving.

(e) To a greater extent than the first year, teacher B2 aided children in learning how to use manipulative materials effectively and independently. This technique seemed to be in consonance with observations of increased utilization of multisensory methods of task presentation in teaching various concepts; e.g., saying, tracing in space, and writing newly presented letters and words.

(f) Finally, although lessons still frequently exceeded 25-minute periods of time with 16 students, teacher B2 made a sustained effort to vary activities so that children would not drift from immediate tasks. Again, this strategy was observed the first year but was more consistently in evidence during the course of the remediation program.

In general, as a result of numerous factors, children in class B2 almost invariably appeared to be responsive to independent or direct instructional activities. Strains of learning were rarely observed and, on such occasions, then were only minimally apparent. Children tended to drift from immediate tasks to a far lesser degree than observations of class B1 or B2 had revealed the first year. In summary, processes of learning in this class the second year seemed to be relevant, self-sustaining, and meaningful in highly specific ways for all children. These events seemed to arise from continued development of already existing sensitivities to individual psychological needs of children, a high degree of technological competency, and an increasing sense of personal freedom and confidence in implementing such instructional techniques which appeared to be partially sparked by release from first-year concerns of inadequacy in failing to cope with behavior of a few children in her class.

In several respects, the structure of the special setting involving teachers C1, C2, and C3 altered the learning environment of children and markedly changed the nature of teacher responsibility for certain aspects of instruction relating to task presentations. For example, in contrast to self-contained classroom settings of the first year, individual teacher freedom of pacing tasks was much more controlled. All children changed classes and activities every 25 minutes. Responsibilities of task variation were substantially lessened; teachers easily could plan more uniform kinds of activities for children. In light of the greater control of such a setting, it was interesting to observe the extent to which and ways that the three teachers attempted to introduce variation into courses of classroom activities. While in certain respects this kind of situation appeared to relieve some burdens of task presentation, it also posed a considerable challenge to the ingenuity and creativeness of teachers to conceive of different ways of breaking mechanical routines of simply rotating classes of children with little consideration of individual psychological needs. Of the three teachers involved in this setting, behaviors of two teachers who were in the study both years will be discussed here. Instructional practices of the third, who joined the study the second year, will be considered later.

Although the character of the team-teaching approach was quite different from the more independent structure of the self-contained classroom, individual teacher styles of task presentation still emerged. Similar to her instructional practices of the first year, task presentations of teacher C1 continued to reveal a high level of sensitivity to varying psychological needs of children. These awarenesses extended far beyond the more general groupings of children for classes in accordance with types and severities of learning disabilities. With 48 children, including eight still involved in the study, she was responsible for teaching reading abilities and skills. In contrast to observations of the other team classes, she was able to spark desires of children who had revealed little interest in participation the first year with teacher C2 and who continued to display resistance to learning with teachers C2 and C3 during the remediation program. This openness and enthusiasm was conceived to be attributable to ways in which teacher C1 personally interacted with the children. Too, these predispositions toward learning seemed to be indicative of her degree of insight and the kinds of strategies which she employed during processes of instruction. The major orientation of these techniques has already been described in considerable detail in the previous section on specific teacher characteristics. These supportive strategies remained principally the same the second year and will not be re-evaluated at this point. On the other hand, there were some changes in her behavior relating to task presentations.

These manifestations included the following observations.

(a) To a much greater extent than the first year, she presented tasks to children in ways which reflected not only existing general sensitivities to learning and emotional difficulties but also growing awareness of more specific aspects of learning disorders. Like all but teacher B2 the first year, she had not conceived of ways in which to alter task presentation in accordance with varying disabilities, other than response to more obvious failures of children to comprehend language. However, increasingly throughout the second year she employed more specific kinds of manipulative and supportive aids toward learning. For example, audio-visual equipment such as language masters, filmstrip projectors, and typewriters was commonly used; independent educational games focusing on specific learning objectives were frequently observed; additional teacher-constructed clues such as darkened lines controlling spatial orientation of letters and words were in greater evidence. In addition to easing difficulties of grasping various concepts, these kinds of strategies tended to engage children actively in either individual or group tasks which provided considerable variation to their learning experiences.

Again, in considering such changes it is extremely important to recognize that the mere provision of these aids was not conceived to be the primary indication of increased sensitivities of this teacher to specific learning abilities of children. In general, all of the teachers the second year relied more heavily on audio-visual equipment; in certain instances, the use of these aids actually represented no more effective or insightful means toward teaching children than other materials. Ways in which teacher C1 employed these strategies with different children represented the significant change in her instructional practices.

(b) Rechecking of and immediate feedback on learning tasks seemed to be more active and direct than observations of the first year had revealed. In large part, these practices seemed to arise from this teacher's awareness of the following consideration: In order to be meaningful and to have any degree of continuity within the limited 25-minute periods, daily tasks needed to represent fairly complete entities which communicated a sense of closure to children and, at the same time, prepared them for successive steps toward further learning.

(c) The second year children participated in a variety of learning activities on a more individualized basis than the first year. In light of the kinds of tasks which were selected for different children, this change appeared to be another manifestation of increasing teacher awarenesses of and attempts to meet specific learning needs. Such practices of teacher C1 differed considerably from those observed in class C2, where children also were given individual instruction which focused more primarily on varying levels of similar tasks than on distinct approaches. Thus, although in both classes there was evidence of more individualized instruction, the underlying rationales for those patterns of task presentation seemed to be quite diverse.

(d) The second year some of this teacher's strategies for arousing and maintaining interests of children in learning seemed to have a more specific direction than techniques of the first year. For instance, often questions were posed or additional information was presented at the close of lessons in preparation for subsequent tasks. Although the first year she was quite explicit in discussing why she was requiring certain tasks, these newly conceived strategies seemed to help establish an even greater continuity to learning and more specifically focused learning expectancies of children.

(e) Some of the ways in which teacher C1 attempted to minimize distractibilities of children during courses of instruction the second year were rarely in evidence the first year. For example, she appeared to be more aware that certain children less likely would attend to direct teacher instruction or work independently if they were placed in close proximity to other children and adults or within viewing distance of windows. Thus, she often seated children where these kinds of room distractions were not as paramount. Also, she checked independent tasks of more distractible children somewhat more frequently than those of others who were able to attend for longer periods of time.

In summary, observations of teacher C1 seemed to reveal that, in addition to already existing sensitivities to children, minor changes in the character of task presentations reflected attempts to structure learning in ways which were highly congruent with learning styles of individual children. Although the general orientation of her teaching practices remained largely the same, these changes were conceived as representing substantial growth in her instructional competencies.

Task presentations of teacher C2, although still generally nonsupportive to psychological needs of individual children, did show evidence of some changes. With these modifications and more appropriate task selections, her instructional practices appeared to provide knowledge for children in a more organized learning environment. Thus, while her instructional practices still seemed to be far from conducive to creating optimal learning conditions, ways in which she approached teaching children the second year exemplified a major advance over prior occurrences.

More specifically, these departures from first-year observations of behaviors of teacher C2, relating to task presentations, were apparent.

(a) In contrast to common practices of the first year where children were assigned pages of workbooks or basal readers for extended independent activities with little or no direct follow-up, teacher C2 did make an attempt to check most completed tasks of all children within the 25-minute periods.

(b) Although she never became actively and fully involved in participating in learning processes with children, she did function in a much more constructive and directive capacity the second year. For example, she helped children to accomplish tasks successfully in individual instructional situations. She more frequently gave examples in order to convey concepts and relied not only on verbal explanations but sometimes included other kinds of demonstrations such as visual illustrations. Too, procedures for task accomplishment, seldom specified the first year, were more consistently outlined to children the second year.

(c) Increasing uses of manipulative aids and greater freedom of communication among children during independent activities seemed to facilitate, to a degree, their ease of problem-solving. Too, more specific directions, designated at the commencement of independent activities, allowed less margin for confusion and ambiguity. These kinds of strategies, as well as more tolerant ways of interacting with children, probably were partially responsible for second-year observations of somewhat diminished resistances to learning.

(d) First-year observations had revealed that teacher C2 controlled behavior of children in stifling and almost painfully unbearable ways. The second year controls were still excessive; however, teacher C2 did attempt to channel limitations in more purposeful directions. For example, rather than constantly yelling at or ignoring children who were in need of assistance during learning activities, she specified times when they could obtain help from her and times when they were required to work independently. This kind of approach was somewhat inflexible in terms of responding to contemporary behaviors of children. Yet it seemed to be a marked improvement over haphazard techniques observed the first year, when children often were left with no guidance. Further, in addition to introducing greater organization into the course of class activity, it appeared to relieve some of the burdens of constant demands and interruptions of children during teacher instruction.

(e) First-year instructional practices of teacher C2 had been rarely characterized by efforts to change failure-oriented attitudes and feelings of children or to lighten burdens of anxiety and frustration. The orientation of task presentations was far from self-enhancing to varying learning needs of children; and on only rare occasions was this teacher even minimally encouraging to children. Although this heavily failure-oriented approach still persisted the second year, it was tempered with such practices as rewarding children on their papers and charts with stars for successful completion of tasks.

(f) As pointed out earlier in this section on task presentations, direct teacher instruction the second year was individualized to a much greater degree than the first year. Primarily, this approach in class C2 involved following children through varying levels of specified available programs, rather than presenting teacher-conceived learning tasks. While this practice was not innovative in the sense that it was based on teacher observations of and insight about learning and emotional difficulties of children, again it represented a substantial change from disorganized, largely noneffective procedures of the first year.

(g) Finally, as a result of the constant rotations of classes of children within the special team setting, lessons in this class no longer extended over prolonged periods of time.

Such changes in the instructional practices of teacher C2 seemed to have a general effect of maintaining a degree of comfort and organization for both children and the teacher, which had been essentially nonexistent the first year. In terms of the responsiveness of the children, however, these modifications by no means eliminated problems of resistance to learning and emotional outbursts. Among the nine classes observed the second year of the study, C2 was still generally the least supportive setting, predominantly characterized by a lack of teacher sensitivity to such considerations as: (a) anxieties and frustrations of children about participation in learning processes; (b) establishment of a goal-direction and purpose to learning which was reasonably discernible to the children; (c) relief from burdens of total reliance on severely impaired intellectual functions of children; (d) needs for stimulating curiosities of children and leading them to higher levels of cognitive functioning; (e) needs for limiting amounts of information in accordance with learning styles and the nature of proposed tasks; or (f) a recognition that children do vary in their openness to learning and at certain times are better able than at others to accomplish tasks. Thus, although modifications in some aspects of this teacher's instructional practices were clearly evident and important, these other factors, probably to a greater degree than guidelines where changes did occur, were crucial to aiding children to enter fully and enthusiastically into learning processes. This pattern of change in behavior of teacher C2 was not surprising. The generally nonsupportive character of her interactions with children remained quite stable over the two-year period; likewise, guidelines for task presentations which seemed to be more closely related to the first dimension of teacher behavior really changed in no discernible way.

Changes in task presentations of teacher D, the fourth and last teacher who participated both years in the study, were reflected in an increasing degree of class organization which seemed to enhance processes of instruction to a limited extent. At the same time, however, basically her patterns of teaching remained similar to those observed the first year. In particular, teacher D still continued to become evidently frustrated and disturbed when interests of the children were not directly focused on her presentations of learning tasks. In those instances, her effectiveness in communicating with and instructing children was markedly reduced. In other situations, where children were highly attentive, ways in which she responded and presented tasks were much more conducive to learning. During the course of the second year, disruptive occurrences became less frequent. Yet, in contrast to teacher B2, who the first year also had displayed wide dichotomies in her sensitivity to children, she was not able to come to grips with personal sources of these difficulties and class circumstances did not change in such ways as to eliminate the major portion of these events.

The following changes in her task presentations the second year did seem to be partially effective in decreasing behaviors of children which almost invariably precipitated less sensitive responses of teacher D. For example, she made more consistent attempts to vary activities, to limit duration of teacher-directed and independent tasks, to present directions clearly to children prior to the commencement of independent activities. In addition, she tried to individualize instruction to a considerably greater degree than the first year; she also utilized techniques of placing individual or groups of children in quiet activity areas where distractions were less prominent. Such strategies alone, however, were not sufficient to kindle and to maintain interests of children on those occasions when tensions of teacher D mounted and more fundamental sensitivities to children were absent.

In conclusion, on the basis of observations of specific ways in which teacher behaviors relating to the dimension of task presentations did and did not change and concurrent examinations of ways in which the general character of child behaviors in different classes varied, the following tentative patterns appeared to emerge.

(a) Once they were informed about certain strategies for task presentations, all of the teachers, including the least sensitive, were able to effect some degree of change in their behaviors. Further, apparent correlations certainly cannot be considered a reflection of simple cause-effect relationships in view of the multidimensionality of factors contributing to change; yet in at least two instances alterations of instructional practices did seem to be paralleled by some differences in behaviors of children.

(b) Certain strategies for task presentations seemed to be much more easily accomplished than others. These entailed more mechanical, less personally demanding alterations in instructional practices such as greater individualization of activities, the utilization of more manipulative aids, more closely structured scheduling or pacing of activities. On the other hand, effective means toward coping in sensitive ways with anxieties of children; actively guiding their thought processes to higher levels of cognitive functioning; providing "success models" for children; or fully engaging their desires, curiosities, and motivations which all too frequently seemed to be stifled by repeated frustrations and failures were much more difficult to pursue. Ultimately, attention to these kinds of variables appeared to require greater insights of teachers concerning individual needs of children. Moreover, in the final analysis, those teachers whose behaviors were more attuned to such considerations seemed to be able to touch children in more intimate and personally meaningful ways during processes of learning.

(c) In accordance with this second consideration, one further observation was made. The point is also relevant to the dimension of teacher-child interactions. Specifically, during the course of the second year there were teachers who were in constant need of applying certain strategies for controlling or limiting behaviors of children. Most assuredly, when sensitively employed, such techniques have a function in the course of classroom instruction. At the same time, however, without a foundation of deeper understanding of emotional and learning difficulties of children, such external controls appeared to be only minimally effective. In other words, more highly adaptive behavioral changes in children and arousal of their genuine interest in learning appeared to be still largely contingent on personal sensitivities, feelings, and attitudes of teachers toward children. Too, it was perhaps differences in these kinds of characteristics which accounted for apparent uniqueness among similar but variously applied strategies of task presentation of individual teachers.

3. First-year observations had revealed that task selections of teachers were based on varying degrees of general sensitivity to psychological needs of children rather than on awareness of their specific learning strengths and weaknesses. Second-year observations reflected quite a different pattern of responses among the four teachers who remained in the study; their remediation strategies were centered much more directly on individual learning and behavior styles of children.

Second-year task selections were characterized by the following departures from first-year teaching practices. As with the other dimensions of instruction, the degrees to which and ways that these changes were manifested varied with individual teachers. Thus, although the following observations describe general trends of change in teacher characteristics relating to this third dimension of instructional practices, specific exceptions also will be considered.

(a) In contrast to the first year when they were focused primarily on enhancement of academic skills, tasks the second year were concerned with a development of both fundamental learning abilities and academic functions.

(b) Observations the second year disclosed that sensitivities of teachers were keyed, to a much greater extent, to specific strengths and weaknesses of children. These modifications were apparent in both the form and sequence of selected tasks, which revealed a much closer correspondence with learning needs of individual children. This trend again does not imply that teachers displayed uniform instructional practices. Despite the observation that task selections represented a dimension of teacher behavior where many changes were universally apparent, there were still wide diversities among individual teacher practices.

In particular, among the four teachers, B2 and C1 continued to reveal the highest degrees of sensitivity to learning strengths and weaknesses in terms of the kinds of tasks which they selected for children. These more insightful instructional practices were characterized by such approaches as:

First, clearly discernible progression of tasks selected for individual children which moved from requirement of more gross discriminations and associations to finer, more complex accomplishments;

Second, attempts to integrate gradually more specific abilities and skills into broader schemas of learning and cognitive development;

Third, greater variations of tasks which seemed to reflect teacher awareness of the uniqueness of learning difficulties of individual children and thus extended much beyond original diagnostic information and recommendations;

Fourth, the use of multisensory aids and teacher direction which were highly consonant with the severity and types of learning and emotional disabilities displayed by different children;

Fifth, appropriate pacing and sequencing of tasks for individual children which were more attuned to particular learning abilities; e.g., these teachers the second year did alter courses of instruction if children seemed to be unable to experience any degree of success in their accomplishment of certain tasks;

Sixth, modifications in the sequences of tasks in accordance with varying tolerance levels of children; and

Seventh, modifications in the forms of tasks and materials employed in accordance with varying tolerance levels and behavioral distractibilities of children.

In essence, such alternations of instructional practices of teachers B2 and C1 seemed to represent principally changes in the orientation rather than the basic character of their task selections. In other words, during the first year both of these teachers had selected tasks for children which were highly appropriate and meaningful; over the course of the second year, the sensitivities of these teachers were further enhanced and directions to learning were more clearly defined. These patterns were consistent in relation to the large numbers of children with whom both of these teachers were engaged throughout the remediation program.

Although the instructional practices of teachers C2 and D also showed evidence of substantial change from first-year observations, their styles of task selection were very different from those of teachers B2 and C1. For example, both teachers adhered much more closely to specific programs, materials, and strategies which had been recommended at the onset of the remediation program than teachers B2 and C1. Moreover, during the course of the second year, there appeared to be very little expansion of initially suggested techniques and conceptions in the light of changes in children of their classes. Second, the form of tasks selected the second year by these teachers was very different from the focus of instruction the first year in that tasks were directed toward efforts to change identified specific learning difficulties of children. On the other hand, modifications of task sequences in accordance with behavioral manifestations and low levels of tolerance of children were still conspicuously absent in class C2 and not consistently applied in class D. Third, in comparison with the approaches of teachers B2 and C1, teacher C2 displayed no evidence of attempting to relate more specific perceptual discriminations and associations to more complex learning and performance requirements of children. Teacher D did reveal some awareness of the need for such integrations in progression of learning but did not apply this conception in her instruction to the degree that was apparent in the task selections of teachers B2 and C1. Fourth, earlier in the section on second-year observations of task presentations, this point was emphasized: While all of the teachers the second year used certain kinds of materials, such as manipulative aids and audio-visual equipment, to a much greater degree than the first year, the mere utilization of these materials was no conclusive indication that teachers were functioning differently and more sensitively with children. Ways in which these materials were employed with individual children were critical. In essence, the same assumption seemed to apply to instructional practices related to task selections. Thus, there was a wide variation in the degrees of appropriateness of different tasks selected by teachers to meet individual needs of children. In particular, some of these differences appeared to stem from the observation that although the focus of tasks selected by teachers C2 and D reflected efforts to modify learning difficulties in positive directions, the instructional practices of teachers B2 and C1 still maintained greater degrees of correspondence with total learning styles of children, including both their strengths and weaknesses. In other words, unlike the task selections of C2 and, to some extent, those of teacher D, remediation attempts of B2 and C1 did not center exclusively on disabilities of children. Teachers B2 and C1 both provided multiple opportunities for children to perform tasks where success experiences could be obtained more easily. Undoubtedly, the different focus of these accounted for the greater receptiveness and openness of children to learning in their classes.

(c) Each of the four teachers the second year tended to present more discrete learning tasks rather than general lessons frequently observed the first year, which involved multiple steps toward accomplishment.

(d) Tasks presented to children the second year were generally quite structured. For teachers B2 and C1, this observation exemplified little change; learning events in their classes the first year were highly organized. Yet, for teachers C1 and D, this modification represented a substantial departure from first-year occurrences.

(e) Although the learning tasks in all classes seemed to be more specifically relevant to the learning problems of children, observations revealed that the planning of steps toward particular educational objectives were still more consistently meaningful in classes B2 and C1 than in classes C2 and D. In class D, it was often difficult to determine the continuity underlying learning tasks because presentations sometimes were interrupted by emotional disturbances and still persistent disorganization. However, insofar as their purposes could be distinguished, task selections of teacher D appeared to be more meaningful than those observed in class C2.

(f) Teachers B2 and C1 not only graduated levels of difficulty of tasks but also introduced varying degrees of support by means of greater or lesser numbers of problem-solving aids as children progressed in their learning and intellectual development. Both teachers C2 and D used more manipulative aids; however, the instructional practices of teacher C2 revealed no differentiation in terms of the uniqueness of or changes in learning patterns of individual children. Teacher D was somewhat more structured in her use of such materials than teacher C2; yet the rationales for her various provisions still were not as clearly evident as those of teachers B2 and C1.

(g) Finally, with all four teachers who remained in the study the second year, as well as the five new teachers, it appeared that generally selections of tasks for the remediation of various auditory dysfunctions were much more difficult to make than determinations of appropriate strategies for some other kinds of learning disorders. Activities such as isolated repetitions of digits, sounds, words, or sentences held little interest for children and usually within very short periods of time lapsed into feelings of frustration and monotony. Further, there was little evidence to ensure that such practices really would eventuate in productive learning. Thus, over the course of the year, all of the teachers displayed greater need for direction in terms of the kinds of tasks which might be beneficial in changing auditory dysfunctions of children. The first year this problem was not evident because teachers were not focusing directly on specific learning difficulties.

While this observation was made in relation to only a few teachers, it did seem to raise further and perhaps some important implications. More specifically, it is possible that because these disabilities are far less tangible than visual disorders, less intensive research has been conducted and the scope of our knowledge about the etiologies of, character of, and effective remediation for such learning problems has been extremely limited. Further, if a teacher or researcher conceives that remediation should be pursued via the utilization of various kinds of auditory stimuli, such incentives are far less concrete and durable than visual aids. Thus, in reality, such disorders may be more difficult to change.

In conclusion, there are a few speculations which might be advanced in attempting to understand why changes relating to this third dimension appeared to exceed the extent to which teachers modified the character of their interactions and task presentations and what factors might have contributed to the widely prevalent diversity among task selections of the four teachers the second year.

(a) In the initial stages of discussion of the four dimensions of teacher behavior at the beginning of the present chapter, this thought was entertained: Since they involved less immediate decisions which could be made primarily outside the mainstream of classroom instruction, teacher behaviors relating to task selections might be more liable to change. In other words, the actual decision-making process of task selection which was reflected in the form and sequence of knowledge presented to children was somewhat removed from the challenge of direct confrontation with children. On the other hand, evaluations of the degrees to which teacher-child interactions and task presentations changed were directly contingent on consideration of the ways in which teachers responded to children. For these reasons, criteria related to teacher-child interactions and task presentations perhaps were more difficult for some teachers to attain than those concerned with task presentations.

(b) It was possible that personal characteristics of teachers such as attitudes and feelings had a more decisive impact on processes of teacher-child interactions and task presentations than on task selections. In particular, although instructional practices related to this third dimension were by no means divorced from the influences of teacher feelings and attitudes, these personal characteristics may have been more easily controlled; some recommendations for task selections were more tangible and perhaps could be implemented with less personal regard for immediate behavior which inevitably involved attitudes and feelings of both teachers and children. For example, it seemed quite likely that the selection of certain kinds of visual tasks for a particular child would be more manageable and less personally involving for a teacher to accomplish than a determination of ways in which to spark his interest in participation in learning processes. In fact, with teacher C2 and, to some considerable extent, with teacher D the kinds of changes that did evolve over the two-year period seemed to be centered primarily on modifications of more concrete, definable aspects of their instructional practices. This observation obtained in relation to the dimensions of both task presentations and task selections and, again, was apparent with respect to the organization of class instruction, which will be discussed in the next section.

(c) In accordance with this observation, it appeared that a good deal of the variation among task selections of the four teachers arose from different degrees of sensitivity to individual learning needs of the children. While the focus of instruction of all four teachers the second year was much different from that of first-year observations, task selections of teachers B2 and C1 seemed to reflect a deeper understanding of children and more perceptive insights about learning and emotional difficulties. Moreover, the first year teachers B2 and C1, to varying degrees, had revealed some awareness of general progressions of cognitive development and also had demonstrated their ability to conceive of learning tasks in accordance with their own observations of children. Thus, at the commencement of this study instructional practices of these two teachers seemed to be characterized by technological competencies which were rarely apparent in observations of classroom strategies of teacher C2 and were employed less consistently by teacher D.

(d) It seemed probable that some teachers themselves viewed task and material selection as more critical to change than the effects of ways in which they interacted with children or presented tasks. One observation which seemed to be indicative of this consideration was the excessive concern of some teachers the second year about special kinds of materials and a less active interest in other critical aspects of instruction related to the first two dimensions. This observation was especially relevant to the responses of teachers C2 and D and was also germane to the reactions of the five new teachers. It was much less applicable to teachers B2 and C1, who seemed to recognize the significance of these other aspects of instruction. In either case, the essence of this fourth consideration is the following point: Probably teachers change, to the greatest extent, those behaviors and respective classroom strategies which they conceive to be the most important. Undoubtedly, for several reasons, a number of teachers participating in the present study the second year viewed some of the techniques related to this third dimension as the primary basis for remediation of learning disabilities in children. In instances where views seemed to diverge from this conception, i.e., those of teachers B2 and C1, variations of instructional practices were apparent.

Finally, perhaps to a fault, this writer has emphasized the importance of teacher feelings, attitudes, and perceptions in influencing classroom strategies. Yet, in view of the extent to which these teachers variously recast their instructional practices in more specific terms of learning disabilities of children, it does seem that the point warrants reiteration. In some instances, perhaps the reality was that such changes in strategies were primarily reflections of simply following designated recommendations. On the other hand, it is difficult to believe that, however great or small, wittingly or unwittingly, such modifications did not have some impact on the orientations of all teachers, which the first year generally had appeared to be entrenched in very different conceptions of children in special classes. The intent here is not to maintain that the remediation program had radical and all-pervasive effects on attitudes of teachers. As discussed earlier in this chapter, these kinds of changes were extremely difficult to incur. However, the major point is this: The general orientation of instruction of these teachers appeared to disclose some significant departures from first-year practices; and where these changes were, in fact, reflections of different teacher attitudes, they were equally as important as any specific modifications of instructional practices.

4. The fourth and last dimension of instructional practices under consideration was the organization of class instruction. Like the third dimension, specific practices defining this aspect of teaching were characterized by several changes from first-year observations. Some of the following modifications were more paramount.

(a) In contrast to the first year, each of the four teachers more carefully distinguished between instructional and functional levels in their teaching. Although there was still considerable variation in the kinds of tasks which they required, in both direct instructional and independent situations teachers less frequently made requests with which children seemed to be unable to cope. This factor was one of several variables probably contributing to the general observation the second year that children less frequently interrupted teachers during the course of individual instruction.

(b) Increased organization of instruction appeared to be reflected in another strategy which was largely absent the first year in classes C2 and D. In particular, during the course of the remediation program both teachers allotted specific periods for checking and clarifying understanding of completed tasks. The instructional practices of teachers B2 and C1 revealed no substantial changes in this respect; both teachers had made provisions for such activity the first year.

(c) In terms of coordinating direct teacher instruction and independent activities, again teachers C2 and D altered their approaches from first-year practices where children had expended long periods of time waiting for assistance. The second year teachers B2 and C1 continued to maintain this balance which was clearly evident in the structure of their classroom activity the first year.

(d) In classes C2 and D, activities the second year were considerably more varied than they had been the first year but still did not reflect the degrees of individualization apparent in classes B2 and C1.

(e) In classes B2, C1, and D, teachers planned the physical placement of children who functioned less well in close proximity with other children and adults in independent and direct instructional situations. For teacher D, this change represented a substantial departure from first-year practices which had not included such techniques. To a limited extent, teachers B2 and C1 both had employed some of these strategies the first year.

(f) In classes B2 and C1 and, to some lesser degree, in class D, there was evidence of preplanned reserve activities for children whose tolerance levels were low and who needed relief and change from the mainstream of learning processes. In class B2, these kinds of provisions were more prominent the second year than the first year. For example, one manifestation of this teacher's increasing attention to such factors was exemplified in her development of an activity corner where various games, books, and specially prepared teacher materials could be used by one or two children. In contrast to class C1, where they were consistently employed with apparent direction and purpose, supportive, release materials in class B2 were utilized in specific response to contemporary behaviors and feelings of the children.

(g) With the exception of teacher B2, who indicated scheduled programs to children at the commencement of daily activities, the other three teachers still did not provide individually prepared activity cards for children. On the other hand, teachers B2 and D did more consistently state their expectations for very short durations of time; teacher C1 continued to follow a similar approach which she had pursued the first year. In reality, these kinds of directions appeared to be far more appropriate for several children in classes C1, C2, and D than the alternative approach of reading instructions.

(h) Finally, with the exception of C2, all of the teachers maintained continuing and completed work of children in individual personal notebooks. Such a technique seemed to contribute to a sense of success and accomplishment for some children and, further, organized written assignments into one central resource which was easily accessible to children. This strategy was observed in none of the classes the first year.

In conclusion, this increasing utilization of various strategies for organizing classroom instruction was conceived to be an important factor in contributing to the lessened confusion and more comfortable involvement of children in classes C2 and D. In classes B2 and C1, which had been highly organized the first year, specific differences in responses of children were more difficult to determine. With the exception of the few consistently frustrating experiences of children in class B2, which seemed to be incurred by factors other than organizational difficulties, learning in these settings the first year had been generally characterized by fairly stable, active, and purposeful involvements of children in various activities. Of more apparent influence, these modifications probably added to the greater assurance with which both of these teachers approached instruction in their classes. However, it is recognized that such manifestations also reflected the impact of other variables on their behavior.

Summary and conclusions to second-year observations: Changes in behavior of the four original teachers over a two-year period and their relative importance to effective classroom instruction. Second-year observations revealed that, in certain respects, teachers changed in similar ways; they also demonstrated unique characteristics. In particular, teachers shared these commonalities of change.

(a) To varying degrees, instructional practices of all teachers were more oriented toward individual learning needs of different children.

(b) Instruction in all classes included organizational practices which had not been evident the first year. As a result, to varying degrees, learning in each of these classes the second year seemed to proceed at a more comfortable pace and as a more feasible course of action for both teachers and children.

(c) Instructional practices in all of the classes was characterized by more specific identifiable educational objectives.

(d) To varying degrees, independent and teacher-directed tasks required of children and supportive aids provided for accomplishment of these tasks seemed to be more appropriately tailored to abilities and academic skills of children, rather than based generally on grade levels. As a consequence, teachers less frequently requested tasks of children which they were totally unable to accomplish.

There were also uniquenesses to the ways in which teachers modified their behavior. These included the following observations.

(a) Although the instructional practices of each of the four teachers were focused to a greater extent on specific learning disorders of children the second year, processes of instruction of more supportive teachers were more consistently insightful than those of less supportive teachers.

(b) Less sensitive teachers tended to focus remediation strategies primarily on specific learning difficulties; more supportive teachers concentrated their efforts on both learning strengths and weaknesses.

(c) While the remediation strategies of all of the teachers involved changes in the form of knowledge presented to children in accordance with individual performance styles, instructional practices of more supportive teachers, in a broader perspective, were addressed also to behavioral components of learning disabilities of the children.

(d) Although observations revealed increasing use of manipulative materials and audio-visual equipment, more sensitive teachers employed these supportive aids in ways which were much more attuned to the specific learning difficulties of children than less perceptive teachers.

(e) Task presentations of more supportive teachers disclosed increasing sensitivities to ways of guiding thought processes of children; instructional practices of less supportive teachers reflected less consistent attendance to such factors.

On the basis of such observations, it appeared that although each of the four teachers substantially changed her instructional practices during the course of the remediation program, these modifications varied in degree and kind across the four dimensions of teacher behavior. Alterations were especially prominent with respect to behavior relating to the dimensions of task selections and the organization of class instruction. Fewer modifications were evident in the ways in which teachers presented tasks to children; thus these behaviors more closely resembled first-year practices. Finally, with the exception of teacher B2, whose behavior became more consistently supportive in relation to all children in her class the second year, the character of teacher interactions with children remained largely similar to first-year observations.

Factors contributing to these changes were numerous. Among the more important variables were these influences: (a) the impact of the remediation program; (b) attitudes and feelings of teachers, administrators, and children; (c) already existing technological competencies of teachers; (d) unique structures of special settings; and (e) the psychological climate of self-contained classes. In terms of the relative significance of these factors, teacher attitudes and feelings continued to exercise a dominant role in influencing ways in which each of the teachers changed along all four evaluative dimensions. For example, they were much more powerful determinants than the physical structure of special settings and appeared to pervade consistently the direction of impact of the remediation program.

At the termination of the first year, five new teachers who had not participated in the diagnostic phase became involved in the study. As well as revealing five additional unique styles of instruction, which also shared some important commonalities with the original four teachers, these classes provided significant opportunities for observing behavior of the same children with different teachers. Although they had been largely unanticipated and initially quite undesirable, these observations shed further light on several considerations, including the critical importance of teacher-child relationships to effective learning, the variability of behavior of children in response to different teachers, the variability of behavior of teachers in response to different children, differences in impact of the remediation program on instructional practices of the teachers, and again, the decisive impact of teacher attitudes on behavior of the children.

In the next and final section on descriptions of specific teacher characteristics, observations of the interactions and instructional practices in the five classes will be discussed. These will include special settings A2, C3, C4, C5, and D2. As in the previous section, capital letters of this code represent different communities. The subscript numbers designate different teachers.

1. Although the ways in which teacher A, the first year, and teacher A2, the second year, interacted with children appeared to be highly supportive, the reactions of some of the same children to these teachers were very different. Teacher A2 met with a great deal of resistance to her instruction and requests, considerably more inattentiveness and hyperactivity, and overt displays of stress and emotion of children which had not been especially evident under the guidance of teacher A. Such responses seemed to indicate that despite the apparent sensitivity of teacher A2, her relationships with the children were not nearly as secure or initially positive as those of teacher A.

Extreme reactions of certain children to teacher change, emotionally charged behavior of new children entering the class, ambiguous decisions of this new first-year teacher, and the yet formative approach of teacher A2 in coping with and setting limitations for children were a few more apparent influences which seemed to bear heavily on these second-year events. In particular, they appeared to be manifested in the following ways.

(a) Over a two-year period including the diagnostic phase of this study, teacher A had established strong, positive relationships with children in her class. The change in teachers the second year required a transition which at least two children in class A2 openly had much difficulty making. Thus, until one of those children was moved to a regular third grade in January, behavior of these youngsters tended to be extremely disruptive to the mainstream of learning activity.

(b) Behavior of younger children entering the class the second year seemed to be characterized by a great deal more emotional overlay than that of older students who were transferred to an intermediate class. Thus, the addition of several volatile children who were very easily disturbed and not especially compatible with their peers remaining in this class the second year increased tension and discord and augmented problems with which this teacher was barely managing to cope.

(c) Although they seemed to arise largely from various emotional problems of the children, many behavioral difficulties in class A2 appeared to be compounded by inconsistent decisions of the teacher, her lack of assurance in knowing how to cope effectively with such problems, and her failure to set appropriate limitations for children. She often made decisions and presented alternatives to children which ultimately were not carried out on later occasions. Those that were followed through frequently seemed to have little meaning for and effect upon the children. Joking or attempting to convince children that they did not have certain feelings rarely changed the tenor of emotional outbursts. Thus, for at least half of the school year children continued to resist this teacher and more than occasionally verbalized their realizations that she "could not make them do anything." These circumstances improved to some extent immediately following the transfer of the one child who was most "vocal" about his resistance to teacher A2. Yet, even to the end of the year, it was clearly apparent that she had not resolved this struggle and that at times her indecisiveness undermined the bonds of respect, trust, and affection which she had painfully secured with the children.

In spite of these persistent and frustrating experiences, teacher A2 continued to approach children with compassion, empathy, kindness, and a genuine concern for and interest in their learning and emotional growth. Her style of interaction was largely characterized by a willingness to allow children to assert their own feelings and attitudes freely without teacher intervention, provision of opportunities for children to make their own personal decisions, constant efforts to aid children in understanding the feelings and behavior of one another, and delay in asserting her desires and requirements by demand, although she fully realized that such an approach probably would diminish some impulsivity, aggression, and hyperactivity of certain children. She shared with teacher C1 such common practices as engaging in frequent personal dialogues with children, explaining her reasons for particular requests, assuming responsibility for asking children to complete tasks which sometimes they were unable to accomplish, and providing sustaining support for children in the event that they became frustrated and anxious during learning processes. Further, during more formal instructional situations and less structured involvements she encouraged learning through free expression and exploration and always seized upon positive aspects of their behavior in responding to children.

Observations of events in this class raised several questions which were not only of specific concern to this teacher but also of more general importance to all educators involved in attempting to change behavior of children within a classroom setting. In the main, practices of teacher A2 largely corresponded with designated criteria; over time, children did eventually begin to respond in more positive ways toward her and one another. Yet, problems in this class had been extremely difficult to deal with and modify. Excluding the possibility of resorting to such tactics as verbal derogations, compelling demands, and severe criticisms, she was directly confronted with some very serious issues. For example, to what degree could she comfortably allow children to express their needs freely within a classroom setting; are such provisions necessarily always conducive to emotional growth; what resources are available for a teacher to channel maladaptive behavior of children? Clearly, responses to such issues would vary with particular circumstances and would require considerations far exceeding uniformly applied approaches. Teacher A2 was unique in the wide range of freedom which she afforded to children. Yet, as the year progressed and she began to cope more adequately with behavioral difficulties of children, she seemed to move toward this position: That a total lack of structure served a less constructive purpose for some children and that a restricted range of behavior did not need to stifle individuality, spontaneity, and vital personal expression. Too, carefully monitored limitations might aid some children in learning to establish and internalize controls which they had not developed and might not readily accomplish without guidance. The observation that teacher A2 was deeply concerned about such considerations seemed to be one further indication of her highly supportive approach in relating to children.

Teacher C3 was the third participant in the special setting of rotating classes of children. Her role in that program involved her primarily in a development and enhancement of various language functions in children. The character of her interaction, which largely differed from those of her two colleagues, more closely resembled the style of teacher C2. The following description includes a few more paramount observations of this writer.

Teacher C3 maintained interaction with children on a superficial level. Behavioral disturbances were controlled by means of exclusive reliance on practices such as verbal beratement, criticism, and authoritative demands. Although the impact of such derogations did not appear to be as severely debilitating and catastrophic as that of practices of teacher C2, this approach did have similar effects in delimiting freedom of decision, largely stifling spontaneity, enthusiasm, and individual expression, and providing a learning environment which was focused principally on negative rather than positive aspects of child behavior. Second, her response to children seemed to be guided primarily by the varying degrees to which they posed behavioral problems in class management. Third, freer time periods seldom were characterized by efforts to engage children in personal conversation. Such opportunities, at which times children were left to the supervision of a young teacher aide, often were spent in talking with other teachers apart from her classroom. Moreover, whenever she did remain in the classroom, she stayed at her desk and occupied her time with clerical or cleaning duties. This characteristic distance from children also pervaded direct instructional situations; e.g., she seldom displayed encouragement for those children who revealed higher levels of emotional and intellectual functioning or support for children who were experiencing difficulties in coping with academic and emotional problems. Finally, her interactions were almost completely devoid of any clear evidence of awareness of needs such as the enhancement of personal autonomies and development of greater independence in children. In other words, although she did not attempt to manipulate and severely restrict behavior to the excess that was revealed in the practices of teacher C2, she made no discernible effort to move children in more self-sufficient directions. This observation was one further consideration supporting the following general impression of interactions of teacher C3 with children: Her lack of sensitivity was disclosed to a greater extent in her neglect in making firm decisions and becoming an active participant in classroom learning experiences than by any one specific practice or combination of strategies which adversely affected child behavior. Over the second year, there were no substantial changes in her style of interaction with the children.

In response to such an approach, behavior of children in class C3 did not appear to be generally characterized by the kinds of recurring emotional outbursts prominent in some other settings. On the other hand, the influence of this teacher's indecisiveness and alienation seemed to be reflected in observations that neither class performance nor affective behavior of children appeared to move in any universally positive direction. Children revealed little openness and commitment to learning activity which was paramount in their encounters in class C1. Too, although constant requests of children to remain in class C1 were also indicative of the highly supportive ways in which teacher C1 interacted with them, such behaviors were conceived to be equally symptomatic of existing conditions in class C3.

At the close of the first year of this investigation, three children between the ages of eight and ten years were transferred to an integrated program where they attended regular second and third grades on a full-time basis and also received approximately one hour of special assistance in a tutorial setting. At times, instruction was provided individually for these children; on some occasions they met in groups with other children who also needed additional help. Observations of the three children were made only during their participation in the tutorial setting, not during the course of their learning in regular class. In evaluating changes in children placed in such circumstances, it is recognized that multiple school- and child-related variables influence patterns of behavior. However, one important dimension contributing to significant positive growth in these children the second year seemed to reside in the supportive learning environment which teacher C4 created for them.

Like those of B2 and C1, this teacher's interpersonal relations with children were distinguished by inclusion of a majority of the guidelines specified for this first evaluative dimension. Teacher C4, too, responded in differential ways toward children, which seemed to be closely attuned to their particular psychological needs; she encouraged higher levels of emotional and intellectual functioning and repeatedly stressed her expectancies of increasingly more advanced behavior and performance. Although her class periods were extremely short, she afforded opportunities for children to discuss personal and academic difficulties that they were experiencing in their classes and to share their thoughts with one another, as well as to engage in organized, satisfying learning processes. During the course of their reintegration, she seemed to be especially aware that the physical placement of these children in the regular grades would not necessarily assure acceptance by other children or regular class teachers. Thus, the availability of teacher C4 as a liaison person for clarifying misunderstandings was crucial to their continuance in a school setting where probabilities of rejection were increased as a result of identification with prior special class placement and/or gross manifestations of specific learning disabilities. For the most part, serious difficulties were minimized by her anticipation of potential problems and her sensitive response to situations when they did occur. Finally, the need for restricting behavior of the children seemed to be conspicuously absent in this setting. Children willingly joined in all activities. Problems which did arise were always discussed in ways which allowed the children to express their reasons for particular actions without pressures and discomforts of criticism. Attempting to avoid some tensions with teachers and administrators, she occasionally made requests of children to abide by fixed school rules; yet policies, regulations, and potential problems were always explained to the children. In essence, although the structure of this special setting and, in some respects, the rationale and focus of instruction and guidance for these children varied considerably from major orientations of other programs in the study, teacher C4 shared some important commonalities in approach with teacher B2 and C1.

It has been a general observation of the writer that common sensitivities to children often are reflected in diverse teaching practices and patterns of interaction. These differences are conceived to arise, in part, from these major sources: (a) unique personal characteristics of teachers; (b) personal characteristics of children; and (c) the influence of circumstances surrounding special settings. In class C4, these dimensions seemed to bear in some of the following ways on unique patterns of teacher-child interactions.

(a) During the first and second years of the study none of these children were observed to display behavior which distinguished them from children conceived to be "of normal intelligence." During processes of their selection for the program this factor was considered to be of primary importance to their acceptance by other children and regular class teachers. It was anticipated that any readily apparent behavioral deviances of these children, which placed additional burdens on teachers, probably would be viewed as manifestations of mental retardation and thus would tend to augment the likelihood of return to special class.

In light of these patterns of child behavior, teacher C4 was not confronted with the severe pathologies, excessive distractibilities, and various other emotional involvements which most of the other teachers experienced in at least one or two children in their classes.

(b) As suggested above, the focus of interaction and instruction in class C4 very often was directed toward the needs and problems which arose in the regular classes. Thus, this special setting and teacher C4 functioned in capacities quite different from those of other teachers and their classes in the study. Teacher C4 was responsible for dealing with problems which she perceived and which children voluntarily raised with her. Further, to assure any degree of success and comfort in the process of reintegration, it was essential, too, that instruction and guidance of the children coincide with requests and courses of instruction of the regular class teachers.

(c) To a greater extent than any of the other teachers, C4 emphasized to children the importance of their communicating openly with her about class difficulties. This approach was much more direct and gave children a good deal more independence than practices of some other teachers who exercised more control over the time, place, and ways in which such problems were discussed. In terms of the emotional stability of the particular children in this setting, program objectives of total reintegration of children, and characteristic tendencies of this teacher to offer children freedom with responsibility to make their own decisions, the approach seemed to be highly advantageous.

(d) Feelings of closure and hopelessness occasionally pervaded the attitudes of even the best teachers of this study and many children in these special classes. Persistently frustrating and seemingly contradictory behavior of children, lack of recall of knowledge of children, realistic awareness on the part of children and teachers that changes probably would be obtained only after lengthy periods of time, and awareness that the majority of children probably would not be moved from special class were among a few of many realizations and experiences which undoubtedly precipitated less optimistic attitudes and feelings. Children and teacher C4 were by no means free from such reminders. They, too, encountered moments of doubt, intense effort, isolation, and at times bewilderment. Yet, whether it was a result of attitudes of the children, close involvement with other classes, optimistic attitudes of this teacher, freedom from self-contained special classes, or the influence of all of these factors, the psychological climate of this learning center was notably lacking in much of the despondency, withdrawal, and discouragement of children which, to varying degrees, characterized the other special class settings. Likely, too, class C4 differed substantially from these other settings in the following way: In more self-contained, confined class settings, which were rarely integrated with children from the regular grades, chaotic, disturbing events tended to have a cyclical effect in provoking further disruptive incidents; on the other hand, more stable occurrences in class C4 and the broader experiences of these children with others in the regular classes held the potential of perpetuating more positive learning experiences and diminishing maladaptive behavior.

In contrast to the other four teachers in community C, teacher C5 was situated in a fixed, self-contained special class setting. The group included 12 children, five of whom had participated in the study the first year. In general, teacher C5 was supportive with these children; however, her interactions were somewhat restrained and inhibited in terms of her control of behavior and freedom of expression of the children, her perceptions and interpretations of various class events, and her conceptions and expectancies of appropriate child behavior. Her involvements with the children were invariably characterized by respect and gentleness. Severe criticism and belittling of children were seldom observed. Although some children periodically became a bit resistant to learning situations, in the main they responded willingly and conformed to her requests. The psychological climate of the classroom was generally subdued; children were expected to remain at their seats with very little interaction among themselves, even when their desks were moved in close proximity to one another in order to facilitate peer assistance. Their full attention was to be directed toward their assignments while she was involved in small group instruction. In the event that children did drift from their tasks, she quietly reminded them that they had work yet to be completed. Regardless of the varying needs of different children to function independently and to make decisions apart from her direction, to express their acceptance or displeasure with certain class activities which might have run counter to her expectancies, she held to her "conservative" limitations with little alteration in approach in relation to different children. She seemed to be impervious to the individual differences among her students, whose behavior represented a wide range of social and emotional maturity and stability. As a result, children who were able to assume greater responsibility during the course of class experiences and interactions were severely restricted in accordance with her objective of maintaining quiet, passive classroom behavior. Moreover, since she felt that they would probably be rejected and that they lacked academic skills necessary to maintain adequate performance, teacher C5 refused to allow her children to participate in activities with the regular grades.

In many respects, such delimiting practices of teacher C5 seemed to be quite similar to tactics pursued by less supportive teachers in this study. They were restrictive and curtailed the range of experiences open to children in class C5. On the other hand, the general character of this teacher's behavior substantially differed from styles of interaction of less sensitive teachers who appeared to be much less committed to efforts toward enhancing learning in children and who were less attuned to their emotional needs. For example, in contrast to teachers C2 and C3, who likewise exercised considerable control over class behavior, teacher C5 did listen to children, was attentive to their anxieties and frustrations, allowed children to express certain kinds of concerns and problems, and attempted to give encouragement when they were experiencing such difficulties. Although her interactions infrequently displayed the diversity and forethought of tactics employed by teachers B2 and C1, she never removed herself from involvement with the children.

With the exception of one boy who seemed to become increasingly withdrawn and uncommunicative over the course of the second year, behavior of the four other children who originally attended classes C1 and C2 remained largely consistent with first-year observations. For the most part, none of these children had posed behavioral difficulties for the first-year teachers; they were generally willing to respond to requests with little resistance. These patterns continued to predominate the second year; in fact, despite the controlled learning environment of class C5, three of the five children who had been in class C2 seemed to be more relaxed and actually somewhat freer in the ways in which they interacted with teacher C5. Behavior of one child who was transferred from class C1 revealed no marked differences. However, changes in the behavior of the boy who had been in class C1 the first year were clearly apparent. While the underlying sources contributing to these differences were impossible to identify in specific terms, the following factors were conceived to be relatively important in light of observations and discussions with this child over the course of the second year; i.e., the impact of less class freedom, teacher requests which seemed to be somewhat embarrassing to him, enrollment in a class of children with whom he seemed to share less common interests, the influence of vastly different teacher attitudes, and a deteriorating family situation. Thus, although the character of interactions of teacher C5 was considered to be partly responsible for these changes, they certainly did not comprise the sole influence bearing on his behavior.

At the close of the first year, five of the ten children in class D were transferred to class D2. This placement provided an opportunity for the writer to observe interactions of a fifth and the last new teacher who joined the study and child behavior which represented dramatic changes from prevalent first-year occurrences where children revealed moderate to severe emotional difficulties. In particular, during the second year, children in class D2 became increasingly able to attend to academic tasks over extended periods of time, were less frequently and severely disturbed by one another and class circumstances, became better able to control and delay impulsive responses, became less "egocentric" and better able to consider alternative points of view, and were increasingly able to express reasons for and to reflect upon their own behavior. On the basis of observations of teacher-child interactions, it appeared that these modifications arose in large part from incisive strategies conceived by teacher D2, which comprised a uniquely diversified, creative, and highly perceptive interpersonal classroom approach.

The following characteristics distinguished this teacher's style of interaction with children.

(a) His intervention strategies often were applied in anticipation of rather than in reaction to child behavior. Of critical importance to the effectiveness of such strategies were at least two considerations which were clearly reflected in the interaction processes of teacher D2; i.e., appropriate timing of responses and the nature of sensitive responses in light of different children and impending circumstances. This course of action seemed to have an effect of tempering and preventing tensions of some children which otherwise probably would have mounted to emotional outbursts such as those frequently observed with teacher D the first year.

(b) In addition to preventive strategies, other practices of teacher D2 appeared to contribute to observations of changing emotional behavior of children. For example, like teachers A2, B2, C2, and C4, he also focused his major effort on reinforcing positive behavior of children. Frequently he offered no response to children engaging in less desirable activities. When problems were so acute that they required immediate intervention, he sought recourse in other strategies such as allowing children to leave the room and return when they decided that they could more adequately cope with the classroom situation; discussing sources of problems with individual children without teacher demand for change; allowing children themselves to resolve some issues without direct teacher intervention; and at times attempting to shift the focus of their attention to other interests. In response to these various strategies, tensions of children were released and often disturbed behavior subsided within short periods of time.

(c) The effectiveness of strategies such as those described above seemed to be contingent on feelings of trust, respect, interest, and affection between teachers and children. Without the strength of these interpersonal predispositions, teacher attempts to modify behavior of children observed in some classes often went awry. Although the growth of interpersonal relationships in class D2 revealed many difficult moments of vacillation, distrust, and anxiety, it appeared that over the course of the year interactions between teacher D2 and the children became more predominantly characterized by mutually positive feelings.

Among all of the classes, relationships between children and their teachers in classes B2, C1, and C4 most closely approximated the positive nature, consistency, and depth of interactions observed in class D2.

(d) As discussed in the section on first-year observations, one of the apparent major deterrents to the growth of independence in children in class D seemed to be constant efforts of the teacher to meet all desires and expressed needs of the children. This objective not only was frustrating and nearly impossible for teacher D to attain but also seemed to be highly ill-advised in terms of promoting change in children. Observations of teacher D2 revealed quite a different pattern of supportiveness. He was sympathetic to and understanding of feelings of the children. Yet he expected that children would function independently without step-by-step teacher direction and constantly emphasized the importance of and his satisfaction with more adaptive behavior and performance. In essence, he was far less controlling of child behavior than teacher D; such an approach seemed to be much more conducive to development of personal autonomies of children than the somewhat stifling tactics of teacher D the first year.

Summarizing second-year observations of interactions of the five new teachers and children in their classes, these patterns emerged.

(a) With the exception of teacher A2, who was initially confronted with severe transference problems of children in her class, degrees of teacher sensitivity seemed to correlate fairly closely with evaluations of positive behavioral and performance changes in children across classes. Strategies of teachers A2, C4, and D2 seemed to be the most consistently enhancing to children; those of teacher C5 were moderately sensitive to psychological needs of children; and practices of teacher C3 appeared to be the least congruent with observed individual differences and potentials for growth in children.

(b) With the exception of teacher A2, whose behavior revealed considerable change immediately following the transfer of one child from her class, the general character of teacher interactions remained quite constant over the second year. Those teachers who were the most supportive to children at the onset of the remediation program continued to display practices which demonstrated their progressive insights into processes of learning and behavioral changes in children; strategies of less sensitive teachers less frequently reflected these kinds of awarenesses. Thus, in terms of direct effects of the remediation program on styles of teacher interactions, again changes seemed to be minimal.

(c) Although the effects of teacher interaction on child behavior were largely indistinguishable from influences of other aspects of instructional practices, in the final analysis it was conceived that teacher behaviors relating to this first dimension were key determinants of directions of changes in children. This conclusion is based on the following observation: Despite variabilities of change in children evident across all of the classes, there were general tendencies of children within classes to progress, remain somewhat static, or regress in their behavior. With the exception of initial observations in class A2, these trends in child behavior from the first to the second year were congruent with evaluations of teacher interactions in different classes.

(d) Observations of the four original teachers over a two-year period revealed that, in certain instances, teacher interactions were substantially influenced by behavior of different children and that dramatic positive changes in teacher practices sometimes ensued after children were transferred from classes. Similar observations were made in class A2 where the teacher was able to function much more effectively and comfortably when one child was removed from her class. Although the importance of such influences on teacher behavior is not to be minimized, it is essential also to consider this point: In both classes where positive changes were most conspicuous, observations had revealed that interactions of the teachers were basically supportive to children. Thus, it appeared that although external factors may seriously impair or enhance class interactions, fundamental teacher predispositions toward children still remained highly important. There were classes, i.e., C2 and C3, where changes in children had no appreciable effect on the character of teacher-child interactions.

2. Like teacher behavior relating to the first evaluative dimension, task presentations of the five new teachers varied a great deal in degrees of appropriateness, ingenuity, and insightfulness of strategies. The range of practices included utilization of highly perceptive, unique methodologies by some teachers; the use of moderately effective, more traditional tactics by others; and the use of procedures in one class which revealed little evidence of any specific plan. In brief, the following observations in the five classes were made.

At the commencement of the second year, task presentations of teacher A2 were extremely general and unstructured, revealed little correspondence with specific learning needs, and seemed to be only marginally effective in engaging children in learning processes. As she gained experience over the year, her approach began to change and she became considerably more perceptive in evaluating and developing various clinical strategies toward the remediation of learning and emotional difficulties of children. More specifically, initial observations revealed that children were given very little direction in independent activities; page assignments were made and children were left to complete tasks with no supportive aids or teacher and peer assistance. Often children were unable to attend for prolonged periods of time and were unable to cope with requirements; thus they quickly lost interest. Not many weeks had elapsed at the beginning of the year before these tendencies of children began to become frequent patterns of functioning; and without teacher direction little learning appeared to transpire. In contrast, individual instruction was more carefully guided. Although she relied heavily on verbal materials and methodologies for conveying concepts, she did actively participate in learning processes with children in attempting to extend their fund of knowledge and the focus of their insights and to involve them consistently in dialogue with her and one another. In small groups of three or four, children seemed to be responsive to her presentations; however, in frequent larger gatherings they were again extremely inattentive and distractible.

In time, there were changes in this approach of teacher A2. More closely defined directions, shorter durations of class periods, and more careful attention to the kinds of tasks required of children on an independent level helped to ease some of the anxieties and concerns of children. Moreover, whenever lessons became disorganized and children grew frustrated, teacher A2 was much more sensitive to the kinds of problems which might have precipitated resistance and was able to work through these difficulties so that they more frequently were willing to continue or attempt other tasks. Finally, although initially she seemed to lack knowledge and experience of how to change and reorient certain manifestations of children, she remained sensitive to the contemporaneity of their behavior. Thus, despite the observation that her task presentations did not include a majority of the criteria designated for this dimension, teacher A2 demonstrated through her changing insights and increasing facilities to cope with learning situations that she held considerable potential for becoming highly competent in guiding learning processes of children.

Observations of task presentations of teacher C3 disclosed a very different pattern of instructional practices. Lessons were offered to children with little active teacher involvement or enthusiasm; little evidence of sensitivities to and understanding of anxieties when children became frustrated with tasks and resisted participation; no differentiation of approach in terms of special learning and emotional needs; and little evidence of how to change behavioral and learning patterns of children other than by constant repetition and correction. Daily she presented the same language lessons to all of the children in the rotating classes which usually consisted of activities selected from the Peabody Language Development Kit. Although this program includes a wide variety of worthwhile developmental tasks, it seemed that the principal value of such activities inhered in their adaptation to specific needs of individual children rather than indiscriminate application regardless of the nature of particular language difficulties. Furthermore, the lack of continuity of successive daily lessons strongly indicated that her selections of tasks were random, adhered to no carefully planned sequences of activity, and, as a result, had no discernible base of goal-direction for children. In essence, the majority of lessons bore no apparent relationship to meaningful personal experiences of children. Her plan of pacing tasks, a second major aspect of task presentations, consisted exclusively of beginning and terminating lessons within allotted 25-minute periods with no particular introductory, directive statements and few efforts to summarize and re-emphasize purposes of lessons.

In general, these practices of teacher C3 closely resembled her style of interaction which was chiefly characterized by a lack of personal investment in the learning experiences of children in her class. Over the course of the year, teacher C3 displayed no important changes in this approach. In light of such events, it was not surprising that the participation of children in these classes lacked the care and interest which seemed to distinguish their learning in the adjoining class C1.

Learning in class C4 consistently appeared to be a productive, meaningful, and pleasurable experience for children. One vital dimension which probably contributed to this highly positive learning was the nature of teacher-child interactions; a second important determinant appeared to be the style of task presentations of teacher C4. In particular, her behavior relating to the second evaluative dimension was largely characterized by the following strategies. She presented specific, clearly defined tasks to children through a variety of group and individual activities. She conceived of tasks which were challenging to the children; yet she always followed activities to successful completion and thus substantially limited possibilities of their failure. Moreover, whenever children experienced serious difficulty in coping with tasks required in their regular classes, she made immediate provisions for clarifying these problems, observing their processes of accomplishment in order to discern where misconceptions were occurring. In addition, learning in this class had a goal-direction which not only was related to the focus of regular class activity but also was characterized by a continuity of experiences centered on individual needs of children. In other words, although teacher C4 heavily concentrated her efforts on academic problems of children in the regular grades, she carefully integrated tasks in order to provide meaning, purpose, and preparation for subsequent learning experiences.

In terms of guiding processes of learning in children, she frequently employed these strategies which seemed to be quite effective in orienting attention of the children and moving them to higher levels of functioning. For example, often she introduced lessons with discussions of particular requirements and examination of concepts which were especially pertinent to certain problem-solving tasks. When they were in error, she frequently presented children with options in order to afford opportunities for them to discern some of their own points of difficulty. She provided sufficient repetition through a variety of activities so that children could begin to internalize concepts. Although she did not especially utilize supportive aids congruent with a progession from more gross to finer discriminations and associations, which was evident in task presentations of teachers B2, C1, and D2, the kinds of tasks presented to children appeared to be sufficiently keyed to various learning difficulties so that they were able to accomplish requirements without apparent excessive stress and anxiety. The observation that teacher C4 limited the amount of information presented to children during any one period probably contributed also to the more comfortable learning environment pervading this tutorial setting. Finally, although special kinds of materials and audio-visual equipment were utilized to a lesser degree than was observed in some other classes, it did appear that teacher C4 conceived of instructional practices which were carefully geared to particular needs of individual children. Thus, just as special kinds of materials employed by some teachers did not necessarily assure that new or different approaches to learning were being employed, lack of evidence of such media did not preclude the possibility that a teacher was providing insightful learning experiences for children.

Among others, some of the aforementioned strategies contributed to the writer's evaluation that, in large part, teacher C4 met a majority of the criteria designated for this second dimension.

Patterns of task presentations of teacher C5 closely resembled the more restrictive, conservative character of her interactions with children. Tasks were presented in more traditional ways, revealing more general implementations of strategies and few evident efforts to prepare children for involvement in learning situations by means of focusing their attention on proposed tasks, relating learning to their individual experiences, or arousing curiosities. Directions were given in the form of page or activity assignments with few attempts to clarify through demonstration or direct participation requirements of various tasks or to check understanding before completion. Interactions among children during classroom activities were severely curtailed so that possibilities of learning through mutual peer support appeared to be somewhat limited. Teacher C5 was sensitive to anxieties of the children; yet resolution of such frustrations consisted primarily of teacher correction of errors rather than initial provision of "success models" or participation with children to facilitate successful accomplishment. Again, once assignments were designated, children who were engaged in independent activities over extended periods of time were expected to complete tasks without additional assistance; this approach might have yielded more comfortable experiences for children if teacher C5 had more carefully differentiated between functional and instructional levels of tasks during the course of teacher-directed and more independent learning. It was conceived that this aspect of instruction largely contributed to the observation that children in class C5 expended a great deal of time gazing about the room and out windows, playing with objects on or in their desks, and quietly talking or playing with one another whenever possible. Moreover, tasks were varied very little over one-hour periods; and this stagnant pacing of activity likewise probably contributed to the lack of attention and apparent interest evident among several children. Finally, to reiterate an earlier point regarding their involvement in learning processes, children openly resisted, participating only on rare occasions. At the same time, however, class activity was seldom charged with an active, careful, and compassionate commitment of the children. Although such reactions of the children undoubtedly arose from the conservative character of teacher interactions, the nature of task presentations, which have been described briefly above, probably also contributed in important ways to these observations.

Ways in which teacher D2 interacted with children in his class represented a uniquely diversified, sensitive interpersonal approach. Strategies of task presentation employed by this teacher revealed a high degree of competency and insight which was excelled by no other teacher in this study over the two-year period. These predispositions of technological competency and sensitivity were clearly evident at the commencement of the investigation; thus other than focusing this teacher's attention more specifically and immediately on particular strengths and weaknesses of individual children, recommendations for the remediation program probably effected few changes in processes of instruction of teacher D2 which appeared to be self-perpetuating and ever-evolving.

The following characteristics seemed to distinguish this teacher's style of task presentation.

(a) He displayed an incisive ability to analyze, illustrate, and synthesize various concepts for children. Invariably during courses of instruction, he moved from requirements of more gross discrimination, association, and organization to presentations of more complex problems. In this way, he was able to convey salient laws, rules, and primary concepts to children with a much greater degree of understanding toward achieving knowledge than mere statements of appropriate responses to be memorized.

(b) Of key importance were efforts of this teacher to relate general knowledge to specific interests and experiences of children.

(c) On the basis of first- and second-year observations, it was evident that several children in class D2 were highly volatile and became quite anxious and disturbed when confronted with any degree of frustration and feeling of failure. Teacher D2 was extremely sensitive to these variant levels of tolerance in children and consistently offered support and reinforcement at apparent critical points during processes of learning before tensions became overwhelming. The observation that over time children appeared better able to cope with and delay need for immediate teacher responses seemed to indicate that this teacher's approach was effecting some important changes in children.

The dynamics underlying such behavioral changes in children which seemed to be related to ways that teacher D2 dealt with "crisis" and moderately discomforting classroom situations could be only marginally understood from observation. In all probability, these changes were not solely incurred by means of appropriately applied strategies of support and reinforcement. At the same time, however, it was difficult to witness such instructional practices which markedly differed from the immediate gratification approach of teacher D and which were largely intended to move children from more dependent to more independent levels of cognitive functioning and behavior without arriving at this conclusion: To some greater or less degree, by means of a highly perceptive, dialectical process of placing children in challenging yet sufficiently comfortable problem-solving situations, teacher D2 was able to wean children from many inhibitions and anxieties to enhance within them greater flexibility, personal autonomy, and adaptability.

(d) As a corollary to the above strategy, another manifestation of the highly sensitive instructional practices of teacher D2 was reflected in the varying degrees of structure which he provided for different children engaged in processes of learning. In particular, some children more than others required support of step-by-step descriptions of certain tasks; more frequent reinforcement and rechecking of activities; greater variation of tasks over shorter time durations; greater numbers of manipulative aids; and perhaps the assistance of more isolated, less distracting physical surroundings. In accordance with these kinds of needs of children, teacher D2 presented learning tasks.

(e) To a large extent, each of the aforementioned points has been concerned with an evaluation of the kinds of strategies which were employed in skillful and perceptive ways in class D2.

Although this fifth and last point is closely related to the dimension of teacher-child interactions, it warrants re-emphasis in light of its apparent primary importance to kindling and sustaining motivations and interests of children for learning. It is this: As a critical agent affecting learning processes, the teacher brings his influence to bear on children not only by means of particular practices and ways in which he technologically implements those strategies but also through personal characteristics of gentleness, kindness, compassion, respect, and the inner strength of his own self-system which pervade the communication of knowledge. Without these underlying personal resources, adherence to various practices distill to little more than mechanical procedures which, in the best of circumstances, fall grossly short of charging the curiosities, excitement, and determination of children for active and meaningful learning. Such personal characteristics of teacher D2 seemed to provide an important foundation for changes in children which evolved throughout the second year.

In conclusion, in contrast to observations of the four original teachers, it was impossible to compare task presentations of the five new teachers between the first and second years or to assess the relative impact of the remediation program other than by evaluation of changes across the second year. On the basis of these observations of the new teachers, however, the following patterns were disclosed.

(a) There were some minor changes in strategies of task presentation in classes A2 and C5. Similar to observations of two of the four original teachers, such modifications tended to be more superficial alterations in approach. With both the original remaining teachers and the new second-year teachers, these kinds of changes seemed to characterize practices of less consistently competent and confident instructors.

(b) In contrast to observations of the four original teachers, all of whom revealed some changes, instructional practices of teacher C3 showed no discernible modifications over the course of the remediation program.

(c) In consonance with observations of more supportive, perceptive teachers of the first year, task presentations of teachers C4 and D2 reflected ever-changing, deepening insights regarding psychological needs of children and correspondingly effective applications of remediation strategies.

The final conclusion regarding the relative impact of the remediation program on the five new teachers, with some minor variations, was quite similar to that advanced on the basis of observations of the four original teachers; i.e., it was possible to promote changes in the ways in which teachers presented tasks to children; yet the nature of such modifications was primarily contingent on the technological competencies and personal sensitivities which characterized individual teachers. In terms of the lack of highly "objective," methodological rigors of this study, the responsiveness of children and changes in their classroom behavior certainly could never be viewed as a sole criterion of the effectiveness of instructional strategies of different teachers. On the other hand, this observation, which perhaps merits further exploration in terms of the enduring effects on psychological structures and functions of impaired children, was apparent: Children did behave differently with different teachers between the first and second years and during the second year; in general, those classroom changes seemed to be more dramatic and consistently positive in classes where teachers displayed more insightful ways of presenting knowledge.

In terms of task selections of the five new teachers, observations revealed that, in certain respects, instructional strategies were more consistently congruent with designated guidelines. To varying degrees, tasks observed in each of the five classes appeared to reflect efforts of the new teachers to attend to learning difficulties of children, which had been spelled out in the initial stages of the remediation program. Thus, for these new teachers, as for the four original participants, the remediation program had a more substantial impact on this dimension of their behavior. Apparently changes relating to this aspect of instruction were more easily conceived than those concerned with the ways in which they interacted with and presented tasks to children.

Greater consistency in the direction of instructional changes among the new teachers, however, by no means guaranteed uniformity of practices. Wide variations in degrees of appropriateness of tasks still existed. These patterns of task selection seemed to bear close resemblance to greater and lesser degrees of insight revealed in observations of task presentations of different teachers. In particular, the form and sequence of tasks conceived by teachers C4 and D2 extended far beyond recommendations advanced at the commencement of the second year, were flexible in terms of the changing needs of children and contemporaneity of their behavior, focused heavily on strengths of children as well as providing support for weaknesses, disclosed a wide range of variability of tasks in accordance with learning needs of children, carefully graduated complexities of tasks, and integrated specific learnings toward the achievement of subsequent knowledge.

Although classroom instruction of teacher A2 initially revealed few of these kinds of strategies, over the course of the year with greater experience she seemed to become increasingly sensitive to ways in which she could alter the form and sequence of tasks. Similarly, these changes in her approach were reflected in her behavior regarding other evaluative dimensions and seemed to indicate further that she had considerable potential for developing skillful technological competencies and greater understanding of learning problems in children.

The task selections of teachers C3 and C5 differed considerably; yet generally they both tended to be much less flexible, innovative, and precisely keyed to specific learning and emotional difficulties than teachers C4 and D2 and, to some extent, the changing behavior of teacher A2. Neither of these teachers neglected to follow recommendations of the remediation program. To the contrary, they, like teachers C2 and D, utilized a majority of the materials and media suggested as potential resources. Yet, unlike the strategies of more supportive teachers, their practices seemed to be based almost exclusively on the writer's interpretations, with little constructive transfer from their own continuing perceptions and observations of the children. With teacher C3, such an approach seemed to be symptomatic of her limited range of understanding of and interest in children. Teacher C5 appeared to be sensitive to the needs of the children; however, she was so conservative and restrained in her instructional approach and classroom behavior that she severely delimited explorations of a wide range of potentially beneficial therapeutic and educational strategies.

In summary, there was a greater correspondence between strategies observed across the five classes during the second year and specified criteria for the evaluation of teacher behavior relating to the third dimension. At the same time, however, within each of the classes that influence was manifested in widely diversified ways in terms of varying degrees of appropriateness of tasks selected for children.

The organization of class instruction is the fourth and last dimension of classroom practices under consideration in this section on second-year clinical observations of teachers. In general, observations revealed that instructional practices of almost all of the teachers consistently included some of the guidelines conceived to be conducive to more effective classroom organization. For example, with the exception of class C5 where lessons tended to extend to somewhat longer periods, independent and direct instruction in the other classes usually did not exceed 25-minute durations. Although teachers A2 and C5 did not allot specific time periods for checking and reviewing required tasks to a degree that seemed warranted by prevalent questions and inattentive behavior of some children, they, like teachers C4 and D2, did appropriately pace activities of individual children and small groups. Teacher C3 rarely grouped children for individualized instruction; almost invariably lessons were presented to each of the rotating classes in its entirety. In clearly differentiating between functional and instructional levels, again teachers C5 and D2 most effectively maintained this distinction; teachers A2 and C5 revealed increasing changes in this direction over the course of the year. Following a rather consistent pattern of poor class organization, teacher C3 showed little apparent awareness of the important relationship between task requirements, varying levels of task difficulty, and correspondingly appropriate instructional settings for achievement of tasks. With the exception of teacher C3, all of the teachers attempted to vary different activities; to what degree this observations was a specific reflection of the remediation program was not entirely clear. Teachers C4 and D2 revealed the most careful and consistent attention to this aspect of instruction; during the 25-minute periods and across her daily rotating classes, teacher C3 disclosed the least evidence of attempting to vary activities. At the commencement of the second school year, instructional practices of teachers A2 and C5 demonstrated only marginal awareness of the importance of involving children actively in the accomplishment of different kinds of tasks over limited periods of time. During the course of the remediation program, there was a considerable change in their approach. Finally, only teacher D2 pursued the strategy of preplanning activities for children who displayed low levels of tolerance. The need for this kind of tension release did not appear to be especially crucial in the tutorial setting C4 in light of the quiescent behavior and small number of children. Teacher A2 provided alternate activities; yet these options, which largely consisted of game and play activities, seemed to run counter to rather than actually facilitate processes of learning and the effective organization of class instruction. In the main, such difficulties appeared to be another manifestation of a larger array of problems centering on disordered teacher-child interactions. Teachers C3 and C5 preplanned no reserve activities for children.

In the final analysis of changes in the behavior of the five new teachers relating to this last dimension, the following general observations seemed to obtain.

(a) The instructional practices of teachers C4 and D2 were congruent, to the greatest extent, with the guidelines for evaluation; however, since these strategies were largely in evidence at the commencement of the remediation program, there was no clear way in which possible effects of particular recommendations could be differentiated from already existing approaches.

(b) With teachers A2 and C5, patterns of change were more apparent over the course of the year.

(c) Alterations in the instructional practices of teacher C3 were minimal.

Considerations of Change in Teachers, Their Classes, and Educational Strategies

The foregoing sections of this chapter have had three primary purposes. These were: (a) to describe behavior and educational strategies of teachers who participated in this study over one- and two-year periods; (b) to assess the degrees to which various class events corresponded with specified criteria defining four dimensions of teacher behavior during the diagnostic and remediation phases of the study; and (c) to consider briefly underlying dynamics and some possible external sources of teacher behavior and changes in instructional practices which seemed to occur over the course of the second year. The following points summarize major conclusions with respect to these observations.

(a) First-year teachers displayed wide variations in degrees of sensitivity, appropriateness, and consistency of interaction and instructional practice. While certain approaches appeared to be substantially effective in providing meaningful learning experiences, none of the teachers seemed to view low achievement and maladaptive behavior of children or to conceive of appropriate remediation strategies in terms of specific learning disabilities. The second year both remaining first-year teachers and new participants variously included some instructional practices which more closely approximated such an approach.

(b) In spite of the observation that special classes both years varied considerably in terms of number of children, amount of time allotted for instruction, and the nature of particular settings, these kinds of factors did not appear to be related in any consistent, salient way to degrees of sensitivity and technological competencies of teachers or to the extent to which teachers seemed to change during the second year. Of primary importance were personal characteristics, in particular their apparent attitudes and feelings toward children and their stages of development toward achievement of technological competencies. In certain instances, particular children in classes appeared to be disruptive influences; yet often such problems seemed to be substantially related to teacher interactions with the children.

(c) Across the four dimensions of instructional behavior, the ways in which teachers interacted with children and presented tasks revealed greater degrees of variability and remained considerably more stable than strategies related to task selections and the organization of class instruction, which more consistently approximated recommended guidelines.

(d) While the remediation program seemed to bear more heavily on instructional practices of all teachers relating to task selections and the organization of class instruction, the manifestation of those changes varied a great deal across classes.

Individual teacher characteristics seemed to be significant determinants of the nature and direction of those changes. For example, modifications in the behavior of some teachers represented far greater degrees of insight and sensitivity than alterations in practices of others.

(e) Although high degrees of sensitivity of and changes in teacher-child interactions and task presentations did not necessarily assure high levels of technological competency, these conditions seemed to be prerequisites for actively engaging and maintaining motivations and optimal levels of performance of children. Without these predispositions for learning, changes in materials, equipment, and the content of educational tasks essentially produced no substantial differences in teaching approaches.

The last point was conceived to be one of the most significant findings of the present investigation. However, it is not to be viewed without some qualification. First, the conclusion certainly does not ignore the reality that positive changes in some children occurred in the absence of high sensitivities of teachers. Second, it does not affirm the position that important changes observed in some children invariantly were reflected in their performance on clinical tests. Third, most assuredly the enduring effects of such teacher sensitivities on the behavior and performance of children remained primarily indeterminable on the basis of this study. On the other hand, the conception does importantly assert that teacher interactions were critical determinants of contemporary class behavior and performance of children. Thus, it raises a fundamental issue of the extent to which highly selective, supposedly appropriate remediation strategies may facilitate learning in children without the support of teachers who are sensitive to the wide dimensions of their behavior, individuality, and worth as human beings.

The thought may seem to be a bit trite and simple-minded, and one which has been well recognized by researchers, educators, and clinicians as an essential component to promoting meaningful growth in children. Yet, to present, the majority of research studies in the field of mental retardation have grossly minimized the importance of the teacher variable in search of generally effective curricula and methodologies. Further, the limited observations of this study have indicated that children in some of these classes were exposed to educational experiences that seemed to be highly dissonant with their psychological needs. In light of such considerations, the critical impact of teacher influences may have implications more far-reaching than are now fully conceived in terms of either enhancing or retarding probabilities of developing intelligent behavior in children.

The Hidden Handicap: Attitudes Toward Children and Their Implication

Throughout the present volume of clinical observations, the writer repeatedly has stressed the point that many children observed in these special classes not only suffered the pain of their own disordered learning and emotional behavior but also were compelled to carry the burdens of inexorable attitudes of their teachers, who viewed and treated them as "mentally incompetent" individuals. This position was not shared by all; yet it seemed to be prevalent among teachers and potentially debilitating to children to a degree that justifies special consideration. For learners, such disordered attitudes may render severely impairing effects which vastly alter and distort more healthy courses of psychological development. For teachers, they are greater commentaries on personal perceptions, interests, compassions, motivations, and psychological maladaptions than accurate or meaningful assessments of variant disabilities of children. Thus, for both children and their educational caretakers, such predispositions may constitute essentially "a hidden handicap."

Traditionally, children termed "mentally retarded" have been viewed with feelings of hopelessness and despair. In innumerable, unwitting, and subtle but penetrating ways, these adverse attitudes may be communicated to children. Frequently manifested in various guises of overprotection, overwhelming assistance, domineering control, impatience, incessant dwelling on failure rather than on strength, and conspicuously absent expectations for positive change, they may serve to reaffirm already existent feelings of inadequacy, failure, and frustration and stifle basic motivations for living and learning. The nature of deterrents and their particular influences will be specific to individual teachers and different children. Yet, over time the effects probably are somewhat universal in at least one respect: that they tend to intensify and complicate further current learning and emotional problems in children.

In a majority of instances, such occurrences surely are unintended by well-meaning teachers who genuinely empathize with feelings of frustration in children. However, as with all complex human behavior, these attitudes arise from many psychodynamic, interpersonal, and psychosocial origins which may remain largely unrecognized and deeply embedded in the character of ways in which teachers interact with children. Under constantly stressful circumstances where inhibition of feelings and impulsive reactions is difficult for both teachers and children, underlying feelings are likely to be revealed and defenses may be quite resistant to change. This was perhaps one of the principal reasons that the general character of interactions of teachers with children in the present investigation remained highly stable over the one- and two-year periods. In addition, another major problem inheres in the possibility that teachers themselves may be naive to their own needs for changing. In view of observations that special classes often are rather isolated, self-contained settings, seldom integrated into the mainstream of regular class activity and only rarely supervised, tendencies to maintain the status quo of comfortable teaching styles may be perpetuated and seldom challenged. It is indeed an ironic and appalling state of affairs that resources, initially conceived to facilitate learning in children termed "mentally retarded," may run directly counter to that central objective and primarily contribute to the development and continuance of maladaptive behavior. The point has been stated elsewhere in the introductory section of the review of literature: Our conceptions and supposedly altruistic administrative panaceas for coping with learning and emotional problems in children may serve to engender the very characteristics that often are identified with such conditions.

Our personal and collective philosophies and conceptions of impaired children are still in a formative stage of development. Advancement of greater technological competencies that are firmly grounded in a deeper understanding among teachers of theory and knowledge pertaining to learning and emotional disorders in children is essential. Thus, educators will need to become increasingly aware of such considerations as courses of cognitive and affective development; learning processes; neurologic, psychological, and environmental determinants of learning disorders in children; regularities and individual differences in behavior during courses of "normal" child development; and the potential psychological impact of learning and emotional difficulties on cognitive and affective processes of children. Further, beyond these competencies and awarenesses are even more fundamental and imperative requirements. Within themselves educators will need to kindle more sensitive insights into the reservoirs of their own behaviors and those of children in their classes; a greater understanding of their central role in effecting crucial changes in children; and broader perspectives on the possibilities for nurturing changes in children forged with appropriate and innovative conceptions of strategies toward achieving those objectives.

In the final analysis, such requirements will constitute an open-ended search for deeper potentials within ourselves and in children entrusted to our care. Moreover, perhaps together in that search we and they will come to realize that, in actuality, notions of "handicap" inhere to a far greater degree in the eyes of the beholder than in any innate, unchanging condition of impairment.

Variability, Multidimensionality, and Consistency of Performance and Behavior of Children Over a Two-Year Period

Two major purposes of the present investigation have centered on attempts to differentiate and describe specific learning disabilities and to observe and detail apparent behavioral disturbances of children during the first and second years. A primary conception underlying these objectives and the theoretical framework of this investigation has been the notion that multiple variables bear on low performance of children; further, to yield data meaningful for diagnostic and remediation purposes, learning difficulties must be examined in more comprehensive ways than assessment on general intelligence tests or the limited scope of much current research on learning process inadequacies and intellectual dysfunctions of children termed "mentally retarded." In accordance with this conception, the following clinical descriptions will focus directly on considerations of the variability, multidimensionality, and consistency in performance and behavior of the 42 children in this study. It is anticipated that on the basis of this clinical information, characteristics and styles of learning and behavior of children, which appeared to be related to their abilities and inabilities to perform academic tasks, might be ascertained. The discussion will include three principal sections:

(a) Clinical Observations of Child Performance and Behavior during the First Year;

(b) Clinical Observations of Child Performance and Behavior during the Second Year; and

(c) Characteristics of Performance and Behavior: Implications for Learning.

Descriptions are based on the writer's classroom and test session observations and on evaluations of learning profiles and individual performance on clinical tests.

Clinical Observations of Child Performance and Behavior during the First Year

An overview of clinical observations and diagnostic evaluations. Considerable evidence of the present study runs counter to an assumption that children classified as "educable mentally retarded" are characterized by general inability to acquire academic skills and abilities. Moreover, data have indicated that lowered performances on language, reading, and conceptual tasks arose from many sources, were by no means universal among all children, and were insufficiently explained by conceptions of global mental retardation. First-year observations revealed that within and among children patterns of behavior and test and class performances were extremely variable. Children shared in common experiences of learning and emotional difficulties; yet the particular nature of disorders differed widely in terms of a vast array of factors including: (a) cognitive strengths and weaknesses of individual children; (b) the extensiveness of total impairment; (c) severity of behavioral pathologies and specific learning disabilities; (d) their attitudes and feelings toward learning; and (3) the apparent effects of teacher influences on their contemporary class performances and behavior.

The following points are some of the more primary findings of the first-year clinical observations and diagnostic evaluations.

1. In view of at least one aspect of traditional criteria defining mental retardation, current functioning of many children contradicted expectations where usually children considered to be "educable" receive IQ scores of 50 to 79. Eight of the 42 children who remained in the study over the two-year period obtained general performance scores on the Stanford-Binet of at least 90. Including this group, almost half of the sample, 17 children obtained scores exceeding 80.

Three of the six children who left the study at the close of the first year had IQs of at least 90; a fourth, who moved to Ohio, received a score of 88.

2. At mental age levels which ranged from 5-04 to 11-08 years, the majority of children revealed considerable multidimensionality in their performances on clinical tests. Despite the

observation that their performances were variously impaired by greater to lesser numbers and degrees of severity of learning disabilities, dysfunctions of individual children were not uniform and they displayed cognitive strengths as well as weaknesses. Furthermore, mental age and chronological age did not always serve as accurate guides to prediction of these levels of performance. For example, very young children sometimes showed strengths that surpassed their own mental ages and the performances of much older children. Yet some older children who displayed fairly high levels of general intellectual performance were more severely impaired in discrete areas and functioned with much greater difficulty than some of their younger classmates.

3. The performances of some children did not support the writer's initial contention of a pre-established hierarchal order of skills. For example, some children were able to accomplish complex tasks more easily than others conceived to be a good deal simpler. This finding may have been a result of several factors such as the structure of tasks, the content of presented materials, the particular emphasis of prior instruction, or variations in stages and patterns of child growth.

4. During evaluation sessions, the writer frequently observed that children, given the benefit of relaxed pressures of time, repetition of questions, and encouragement, were more willing

and able to accomplish tasks which initially they were reticent to attempt. This observation seemed to have several implications. For instance, a number of children appeared to have high expectancies for failure and in light of these feelings might have been reluctant to respond. Second, such behavior, in part, seemed to arise from initial lack of comprehension of directions, which again may have been reflections of high anxiety states or symptoms of various language dysfunctions of children. Finally, it was conceivable that learning disabilities of some children consisted mainly of slower information processing rates rather than inability to accomplish tasks.

5. Of the 42 children who remained in the study over a two-year period, 23 consistently manifested symptoms of excessive anxiety, hyperactivity, and distractibility the first year. These behaviors were of varying degrees of severity, seemed to be variously responsive to teacher intervention, and appeared to bear in diverse ways on learning processes of children. Although the emotional disorders of these children seemed to arise from sources other than short-term immediate effects of teacher influences, it was apparent that such problems of children were deeply affected by the nature of teacher interaction. Some teachers consistently seemed to enhance emotional outbursts and frustrations, while others tended to minimize emotional problems of children. Moreover, it

has been emphasized in the previous sections on clinical observations of teachers that such effects of teacher interaction were also evident in the responses of children whose classroom behaviors were not characterized by chronic pathologies but nevertheless revealed evidence of mild to moderate anxieties and considerable inattentiveness.

6. Much research has reported that "mentally retarded" children are lacking in conceptual abilities. On the basis of the performances of a number of children in this sample on the Stanford-Binet, this assumption did not obtain. On items designated as involving conceptual-language functions, some children were able to accomplish higher-order tasks commensurate with their chronological age expectancies.

7. On the basis of learning profiles, evaluations of clinical tests, and classroom observations, more prominent cognitive dysfunctions were revealed clearly to an extent that allowed for a designation of particular remediation strategies. In most instances, this consistency usually prevailed not only across the battery where individual subtests were specified to define certain intellectual functions but also in the Stanford-Binet diagnostic profiles.

8. With the majority of children, designated specific learning disabilities consisted of combined rather than single intellectual functions.

9. It appeared that children who suffered from auditory dysfunctions experienced more severe impairment to the acquisition of reading skills than those who had visual learning problems.

10. Levels of frustration of children in accomplishing various academic tasks during class sessions seemed to correspond much more closely to factors such as the appropriateness of teacher instruction and personal perceptions of children of their own incapacities than to specific patterns and degrees of severity of learning disabilities or the extensiveness of total impairment.

11. Although cognitive strengths and weaknesses of children were fairly evident on the basis of first-year evaluations on clinical tests, patterns of functioning appeared to be more clearly differentiated in the performances of children during the second evaluation. In particular, some results of the first year, especially those of the Illinois Test of Psycholinguistic Abilities, appeared to be excessively low on subtests where children later functioned much more adequately. This finding may have stemmed from several sources; e.g., ways in which the subtests were administered, anxiety of the children during evaluation sessions, or the nature of particular subtests. The Illinois Test of Psycholinguistic Abilities was the first battery of subtests administered to children.

In instances of such findings, classroom observations of performances and other test results were of crucial importance.

12. There were substantial differences in degrees of variability of performances of children on different subtests. In large part, these differences seemed to be a function of three primary determinants; i.e., actual variance of performances of children across particular subtests; different allowances for variability within the structure of particular subtests; and different ranges of difficulty included within various subtests. These factors were major sources of differences among rankings of subtests on learning profiles compiled for individual children. As a result of greater to lesser degrees of distortion which arose from test structure differences, rankings of scores had to be evaluated in terms of their relative positions within individual profiles and in light of the dispersions and positions of scores among children.

The aforementioned observations have served to reconfirm this writer's original assumption which comprised the central basis for pursuing the present investigation in terms of a case-study approach: In order to grasp the nature and complexities of learning and emotional disorders in children, there is a need for descriptions along several dimensions of child and teacher behavior and the settings within which certain events occur. The frustration of such an approach inheres in the lack of precision to interpretations which characterizes more highly specific, controllable psychological research and the demand for accountability of an *overwhelming number of variables which potentially bear on behavior yet remain largely undetermined. At the same time, however, such an approach may approximate more closely an accurate understanding of certain behavioral manifestations in children.*

More specific characteristics of child performance on clinical tests. Tables 9 to 17 present performances on the seven clinical tests of the 42 children who remained in the study over a two-year period. These measures are: the experimental edition of the Illinois Test of Psycholinguistic Abilities, Detroit Tests of Learning Aptitude, Frostig Developmental Test of Visual Perception, Bender Visual Motor Gestalt Test, Stanford-Binet, Murphy-Durrell Reading Readiness Analysis, and the Durrell Analysis of Reading Difficulty. Data on individual children include their chronological ages at the commencement of the study, mental ages, IQs, and respective subtest, derived, and total scores. Data on children are presented in terms of four mental age ranges in order to facilitate descriptions of performances. Table 18 includes standard deviations of performances of children on the seven clinical tests during the first, second, and third evaluation periods.

Briefly, the following points summarize major findings from examination of these data.

1. Study of performances of children on the *Illinois Test of Psycholinguistic Abilities* might readily lead one to conclude

that children in this sample consistently suffered from language disabilities. Total scores of younger and/or more extensively impaired children of mental ages 5-00 to 6-11 years appeared to approximate closely their individual mental ages; and among the performances of the majority of children having mental ages of 7-00 to 10-11 years, there were wide discrepancies, frequently of two or three years, between mental ages and total language ages. The total score of child 16, who achieved a Binet mental age of 11-08, reached the ceiling language age; yet there was no way of determining his approximate level of functioning. In light of these findings and on the basis of observations of classroom performance, the writer would agree that in various respects children did experience language difficulties. In this sense, results of this study concurred with findings of numerous other investigations which have reported that children who are variously labeled "mentally retarded" or "learning disabled" experience such disorders.

However, in contrast to conclusions of studies that have characterized "mentally retarded" children as functioning at consistently low levels on particular subtests (Blessing, 1964; Ragland, 1964), data of the present study do not support such a contention. With the exception of the Visual-motor sequential subtest where performances of children appeared to be lower than on other subtests, variability among and the multidimensionality within per-

TABLE 9

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND TOTAL SCORES OF THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES: FIRST EVALUATION, 1968-1969

Subject	CA[a]	MA[b]	IQ	Raw Scores and Language Ages									
				Auditory Decoding		Visual Decoding		Auditory-Vocal Association		Visual-Motor Association		Vocal Encoding	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 5-00 to 6-11 Years													
32	7-07	5-04	62	24	6-09	14	6-08	11	4-05	14	5-09	13	5-04
21	8-04	5-06	60	5	2-09	9	4-09	10	4-02	12	5-01	9	4-01
48	8-11	5-08	59	18	5-02	18	8-09+	13	4-11	8	3-08	11	4-09
44	8-08	6-02	66	18	5-02	12	5-10	16	5-10	13	5-05	16	6-04
39	7-04	6-07	83	18	5-02	13	6-03	13	4-11	14	5-09	11	4-09
47	7-00	6-08	89	18	5-02	13	6-03	16	5-10	8	3-08	13	5-04
20	8-01	6-09	76	13	4-03	14	6-08	15	5-06	14	5-09	14	5-08
Mental Age Range: 7-00 to 8-11 Years													
19	7-10	7-00	80	16	4-09	17	8-09	16	5-10	13	5-05	13	5-04
5	11-01	7-02	64	27	7-11	17	8-09	15	5-06	12	5-01	16	6-04
11	9-05	7-02	70	17	5-00	12	5-10	16	5-10	17	6-10	14	5-08
27	7-10	7-02	85	24	6-09	10	5-02	13	4-11	19	7-06	16	6-04
8	10-04	7-04	68	16	4-09	14	6-08	18	6-06	14	5-09	9	4-01
23	9-06	7-04	72	24	6-09	17	8-09	18	6-06	22	8-07	11	4-09

(continued on next page)

TABLE 9 (continued)

Subject	CA^a	MA^b	IQ	Raw Scores and Language Ages									
				Auditory Decoding		Visual Decoding		Auditory-Vocal Association		Visual-Motor Association		Vocal Encoding	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range:: 7-00 to 8-11 Years													
41	8-07	7-04	79	23	6-05	15	7-03	19	6-10	10	4-04	15	6-00
30	7-09	7-05	90	11	3-10	13	6-03	17	6-01	16	6-06	18	6-11
12	10-01	7-06	71	13	4-03	13	6-03	17	6-01	20	7-10	15	6-00
37	8-03	7-06	81	25	7-01	13	6-03	18	6-06	17	6-10	17	6-07
28	9-05	7-06	74	27	7-11	9	4-09	18	6-06	22	8-07	22	8-11+^{c}
14	9-10	7-08	73	13	4-03	13	6-03	13	4-11	4	2-03	10	4-05
9	11-00	7-10	69	29	8-10+	11	5-06	17	6-01	6	2-11	4	2-07
10	10-00	7-10	73	27	7-11	16	7-10	18	6-06	18	7-02	13	5-04
25	10-02	7-10	72	28	8-10	21	8-09+	18	6-06	13	5-05	15	6-00
35	9-04	7-10	77	25	7-01	15	7-03	20	7-03	16	6-06	20	7-09
15	11-01	8-00	70	20	5-08	16	7-10	16	5-10	11	4-08	15	6-00
43	8-05	8-02	90	26	7-06	10	5-02	20	7-03	19	7-06	20	7-09
3	9-03	8-04	85	9	3-06	16	7-10	20	7-03	18	7-02	17	6-07
4	10-04	8-04	78	24	6-09	16	7-10	21	7-08	20	7-10	18	6-11
26	7-11	8-04	98	23	6-05	12	5-10	15	5-06	6	2-11	17	6-07
38	10-04	8-04	75	26	7-06	15	7-03	22	8-03	14	5-09	20	7-09
1	11-03	8-10	77	30	8-10+	18	8-09+	21	7-08	24	9-04	25	8-11+
18	9-10	8-10	85	26	7-06	20	8-09+	21	7-08	19	7-06	16	6-04
22	9-04	8-10	88	20	5-08	16	7-10	20	7-03	15	6-01	19	7-04
24	9-02	8-10	87	24	7-11	13	6-03	22	8-03	16	6-06	14	5-08
46	9-03	8-10	90	27	7-11	15	7-03	19	6-10	19	7-06	13	5-04

(continued on next page)

TABLE 9 (continued)

Subject	CA[a]	MA[b]	IQ	Raw Scores and Language Ages									
				Auditory Decoding		Visual Decoding		Auditory-Vocal Association		Visual-Motor Association		Vocal Encoding	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 9-00 to 10-11 Years													
17	11-03	9-00	77	29	8-10+	13	6-03	19	6-10	23	8-11	14	5-08
40	11-04	9-00	78	12	4-01	18	8-09+	21	7-08	20	7-10	24	8-11+
2	11-03	9-02	80	14	4-05	13	6-03	15	5-06	19	7-06	15	6-00
42	9-04	9-06	96	31	8-10+	20	8-09+	17	6-01	18	7-02	13	5-04
6	10-11	9-08	84	30	8-10+	19	8-09+	21	7-08	17	6-10	10	4-05
45	9-05	9-08	96	18	5-02	14	6-08	20	7-03	21	8-03	26	8-11+
7	10-00	9-10	91	27	7-11	16	7-10	21	7-08	19	7-06	25	8-11+
Mental Age Range: 10-00 to 11-11 Years													
16	11-04	11-08	96	29	8-10+	20	8-09+	22	8-03	22	8-07	26	8-11+

[a] CA represents chronological age of child at the commencement of the study, September 1968.

[b] MA represents mental age of child at the point of evaluation during the first year.

[c] Plus sign (+) indicates that child's score exceeded ceiling of particular subtest.

TABLE 10

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND TOTAL SCORES OF THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES: FIRST EVALUATION, 1968-1969

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Motor Encoding		Auditory-Vocal Automatic		Auditory-Vocal Sequential		Visual-Motor Sequential		Total ITPA	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 5-00 to 6-11 Years													
32	7-07	5-04	62	14	5-10	10	5-04	12	3-09	7	4-02	119	5-03
21	8-04	5-06	60	14	5-10	5	3-06	5	2-07	11	5-01	80	4-00
48	8-11	5-08	59	11	4-07	10	5-04	13	3-11	9	4-07	111	5-00
44	8-08	6-02	66	15	6-04	14	6-10	14	4-02	9	4-07	129	5-06
39	7-04	6-07	83	11	4-07	10	5-04	16	4-07	10	4-10	116	5-02
47	7-00	6-08	89	14	5-10	9	5-00	13	3-11	16	6-09	120	5-03
20	8-01	6-09	76	17	7-04	12	6-01	14	4-02	11	5-01	124	5-04
Mental Age Range: 7-00 to 8-11 Years													
19	7-10	7-00	80	15	6-04	10	5-04	27	8-06	10	4-10	137	5-09
5	11-01	7-02	64	10	4-02	12	6-01	15	4-04	8	4-04	132	5-07
11	9-05	7-02	70	14	5-10	15	7-03	20	5-07	11	5-01	136	5-09
27	7-10	7-02	85	10	4-02	16	7-07	16	4-07	7	4-02	134	5-08
8	10-04	7-04	68	17	7-04	12	6-01	18	5-01	9	4-07	127	5-06
23	9-06	7-04	72	17	7-04	8	4-07	24	7-00	9	4-07	150	6-03
41	8-07	7-04	79	18	7-11	15	7-03	20	5-07	9	4-07	144	6-00
30	7-09	7-05	90	15	6-04	15	7-03	15	4-04	9	4-07	129	5-06

(continued on next page)

TABLE 10 (continued)

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Motor Encoding		Auditory-Vocal Automatic		Auditory-Vocal Sequential		Visual-Motor Sequential		Total ITPA	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
12	10-01	7-06	71	15	6-04	12	6-01	16	4-07	11	5-01	132	5-07
37	8-03	7-06	81	12	5-00	11	5-09	22	6-03	12	5-04	147	6-02
28	9-05	7-06	74	15	6-04	13	6-06	17	4-10	12	5-04	155	6-06
14	9-10	7-08	73	11	4-07	13	6-06	29	8-06+	10	4-10	116	5-02
9	11-00	7-10	69	7	3-02	10	5-04	23	6-07	11	5-01	118	5-02
10	10-00	7-10	73	18	7-11	13	6-06	15	4-04	11	5-01	149	6-03
25	10-02	7-10	72	11	4-07	16	7-07	27	8-06	9	4-07	158	6-07
35	9-04	7-10	77	13	5-05	12	6-01	16	4-07	13	5-08	150	6-03
15	11-01	8-00	70	14	5-10	16	7-07	16	4-07	11	5-01	135	5-09
43	8-05	8-02	90	16	6-10	14	6-10	17	4-10	17	7-04	159	6-08
3	9-03	8-04	85	17	7-04	17	8-00	22	6-03	13	5-08	149	6-03
4	10-04	8-04	78	19	8-08	20	9-01	28	8-06+	13	5-08	176	7-06
26	7-11	8-04	98	14	5-10	12	6-01	30	8-06+	18	7-10	147	6-02
38	10-04	8-04	75	13	5-05	16	7-07	32	8-06+	9	4-07	167	7-00
1	11-03	8-10	77	18	7-11	12	6-01	26	7-10	15	6-04	189	8-03
18	9-10	8-10	85	13	5-05	16	7-07	19	5-04	11	5-01	161	6-09
22	9-04	8-10	88	21	8-08+	12	6-01	24	7-00	17	7-04	164	6-10
24	9-02	8-10	87	17	7-04	19	8-09	17	4-10	10	4-10	154	6-05
46	9-03	8-10	90	14	5-10	17	8-00	25	7-04	13	5-08	162	6-09

(continued on next page)

TABLE 10 (continued)

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Motor Encoding		Auditory-Vocal Automatic		Auditory-Vocal Sequential		Visual Motor Sequential		Total ITPA	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 9-00 to 10-11 Years													
17	11-03	9-00	77	16	6-10	12	6-01	37	8-06+	13	5-08	176	7-06
40	11-04	9-00	78	15	6-04	13	6-06	22	6-03	11	5-01	156	6-06
2	11-03	9-02	80	10	4-02	16	7-07	29	8-06+	10	4-10	141	5-11
42	9-04	9-06	96	19	8-09+	16	7-07	16	4-07	12	5-04	162	6-09
6	10-11	9-08	84	11	4-07	15	7-03	12	3-09	15	5-01	146	6-01
45	9-05	9-08	96	18	7-11	16	7-07	24	7-00	13	5-08	170	7-02
7	10-00	9-10	91	11	4-07	11	5-09	20	5-07	12	5-04	166	7-00
Mental Age Range: 11-00 to 11-11 Years													
16	11-04	11-08	96	16	6-10	20	9-01	23	6-07	21	9-00+	206	9-04+

TABLE 11

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST SCORES OF THE DETROIT TESTS OF LEARNING APTITUDE: FIRST EVALUATION, 1968-1969

Sub-ject	CA	MA	IQ	Raw Scores and Mental Ages									
				Auditory Attention Span--Unrelated Words[a]		Auditory Attention Span--Related Words		Visual Attention Span--Objects[b]		Visual Attention Span Letters		Disarranged Pictures	
				RS	MA	RS	MA	RS	MA	RS	MA	RS	MA
Mental Age Range: 5-00 to 6-11 Years													
32	7-07	5-04	62	23	-3-00	3	-3-00	26	4-00	0	-3-00	12	8-00
21	8-04	5-06	60	26	-3-00	0	-3-00	19	-3-00	3-1	6-06	1	-5-03
48	8-11	5-08	59	14	-3-00	23	3-09	14	-3-00	4-2	7-09	10	7-06
44	8-08	6-02	66	40	6-06	41	5-06	39	8-00	3-2	6-09	8	7-00
39	7-04	6-07	83	29	3-06	48	6-06	24	3-00	3-4	7-03	16	9-00
47	7-00	6-08	89	35	5-00	21	3-06	55	13-09	5-1	9-00	3	5-09
20	8-01	6-09	76	30	3-09	23	3-09	32	6-00	3-3	7-00	10	7-06
Mental Age Range: 7-00 to 8-11 Years													
19	7-10	7-00	80	37	5-09	39	5-03	33	6-03	4-1	7-06	5	6-03
5	11-01	7-02	64	37	5-09	41	5-06	31	5-09	4-1	7-06	6	6-06
11	9-05	7-02	70	34	4-09	27	4-00	48	11-00	4-1	7-06	12	8-00
27	7-10	7-02	85	33	4-06	36	4-09	40	8-03	3-3	7-00	7	6-09
8	10-04	7-04	68	38	6-00	46	6-03	36	7-03	5-1	9-00	8	7-00
23	9-06	7-04	72	39	6-03	35	4-09	40	8-03	3-4	7-03	17	9-03

(continued on next page)

TABLE 11 (continued)

Subject	CA	MA	IQ	Raw Scores and Mental Ages									
				Auditory Attention Span--Unrelated Words[a]		Auditory Attention Span--Related Words		Visual Attention Span--Objects[b]		Visual Attention Span--Letters		Disarranged Pictures	
				RS	MA	RS	MA	RS	MA	RS	MA	RS	MA
Mental Age Range: 7-00 to 8-11 Years													
41	8-07	7-04	79	31	4-00	31	4-06	34	6-09	4-1	7-06	22	10-06
30	7-09	7-05	90	41	7-00	37	5-00	40	8-03	5-1	9-00	1	-5-06
12	10-01	7-06	71	33	4-06	24	3-09	31	5-09	3-1	6-06	17	9-03
37	8-03	7-06	81	41	7-00	43	5-09	34	6-09	4-1	7-06	23	10-09
28	9-05	7-06	74	35	5-00	36	4-09	39	8-00	4-3	8-03	9	7-03
14	9-10	7-08	73	31	4-00	42	5-06	20	-3-00	5-2	9-06	6	6-06
9	11-00	7-10	69	32	4-03	69	10-00	36	7-03	2-2	5-09	4	6-00
10	10-00	7-10	73	41	7-00	34	4-09	47	10-09	5-1	9-00	15	8-09
25	10-02	7-10	72	42	7-06	47	6-06	33	6-03	4-2	7-09	5	6-03
35	9-04	7-10	77	32	4-03	17	3-03	39	8-00	5-1	9-00	18	9-06
15	11-01	8-00	70	31	4-00	29	4-03	30	5-03	5-1	9-00	13	8-03
43	8-05	8-02	90	30	3-09	28	4-03	38	7-09	4-3	8-03	14	8-06
3	9-03	8-04	85	42	7-06	49	6-09	24	3-03	5-1	9-00	6	6-06
4	10-04	8-04	78	45	8-03	43	5-09	45	10-00	5-1	9-00	16	9-00
26	7-11	8-04	98	49	9-09	55	7-09	37	7-06	4-3	8-03	18	9-06
38	10-04	8-04	75	35	5-00	49	6-09	43	9-06	5-2	9-06	32	13-00
1	11-03	8-10	77	41	7-00	41	5-06	47	10-09	5-2	9-06	8	7-00
18	9-10	8-10	85	44	8-00	33	4-06	50	11-09	5-1	9-00	20	10-00
22	9-04	8-10	88	40	6-06	39	5-03	47	10-09	5-2	9-06	1	-5-06
24	9-02	8-10	87	36	5-03	33	4-06	38	7-09	4-3	8-03	20	10-00
46	9-03	8-10	90	35	5-00	57	8-00	39	8-00	4-3	8-03	14	8-06

(continued on next page)

TABLE 11 (continued)

Subject	CA	MA	IQ	Raw Scores and Mental Ages									
				Auditory Attention Span--Unrelated Words[a]		Auditory Attention Span--Related Words		Visual Attention Span--Objects[b]		Visual Attention Span--Letters		Disarranged Pictures	
				RS	MA	RS	MA	RS	MA	RS	MA	RS	MA
Mental Age Range: 9-00 to 10-11 Years													
17	11-03	9-00	77	45	8-03	59	8-06	37	7-06	5-1	9-00	15	8-09
40	11-04	9-00	78	42	7-06	44	6-00	41	8-09	4-2	7-09	25	11-03
2	11-03	9-02	80	41	7-00	41	5-06	47	10-09	5-2	9-06	8	7-00
42	9-04	9-06	96	24	-3-00	34	4-09	34	6-09	4-4	8-09	25	11-03
6	10-11	9-08	84	35	5-00	56	8-00	46	10-03	4-3	8-03	1	-5-06
45	9-05	9-08	96	37	5-09	36	4-09	34	6-09	5-1	9-00	23	10-09
7	10-00	9-10	91	40	6-06	37	5-00	60	16-03	5-3	10-03	24	11-00
Mental Age Range: 11-00 to 11-11 Years													
16	11-04	11-08	96	36	5-03	43	5-09	53	13-00	5-2	9-06	18	9-06

[a,b] Weighted scores for the Auditory Attention Span for Unrelated Words and the Visual Attention Span for Objects have not been entered in this table.

TABLE 12

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST SCORES OF THE FROSTIG DEVELOPMENTAL TEST OF VISUAL PERCEPTION: FIRST EVALUATION, 1968-1969

Subject	CA	MA	IQ	Raw Scores and Perceptual Age Equivalents							
				Figure-Ground Discrimination		Form Constancy		Position in Space		Spatial Relationships	
				RS	PA	RS	PA	RS	PA	RS	PA
Mental Age Range: 5-00 to 6-11 Years											
32	7-07	5-04	62	11	5-00	6	5-06	6	6-03	1	4-09
21	8-04	5-06	60	5	4-00	6	5-06	2	4-00	1	4-09
48	8-11	5-08	59	17	6-06	5	5-00	6	6-03	4	6-00
44	8-08	6-02	66	15	5-09	15	9-00	5	5-06	3	5-06
39	7-04	6-07	83	5	4-00	9	6-09	4	5-00	4	6-00
47	7-00	6-08	89	20	8-03	14	9-00	6	6-03	7	8-03
20	8-01	6-09	76	16	6-00	8	6-03	6	6-03	4	6-00
Mental Age Range: 7-00 to 8-11 Years											
19	7-10	7-00	80	20	8-03	13	9-00	8	8-09	7	8-03
5	11-01	7-02	64	13	5-03	4	4-06	7	7-00	1	4-09
11	9-05	7-02	70	16	6-00	14	9-00	8	8-09	6	7-06
27	7-10	7-02	85	16	6-00	8	6-03	7	7-00	6	7-06
8	10-04	7-04	68	15	5-09	9	6-09	6	6-03	6	7-06
23	9-06	7-04	72	20	8-03	8	6-03	6	6-03	6	7-06

(continued on next page)

TABLE 12 (continued)

Subject	CA	MA	IQ	Raw Scores and Perceptual Age Equivalents							
				Figure-Ground Discrimination		Form Constancy		Position in Space		Spatial Relationships	
				RS	PA	RS	PA	RS	PA	RS	PA
Mental Age Range: 7-00 to 8-11 Years											
41	8-07	7-04	79	16	6-00	11	7-06	6	6-03	6	7-06
30	7-09	7-05	90	12	5-03	5	5-00	3	4-09	2	5-00
12	10-01	7-06	71	19	8-03	12	8-03	8	8-09	7	8-03
37	8-03	7-06	81	20	8-03	8	6-03	7	7-00	7	8-03
28	9-05	7-06	74	20	8-03	14	9-00	8	8-09	6	7-06
14	9-10	7-08	73	18	7-00	10	7-00	4	5-00	6	7-06
9	11-00	7-10	69	19	8-03	12	8-03	7	7-00	8	8-03
10	10-00	7-10	73	20	8-03	11	7-06	7	7-00	6	7-06
25	10-02	7-10	72	19	8-03	6	5-06	6	6-03	7	8-03
35	9-04	7-10	77	20	8-03	13	9-00	8	8-09	8	8-03
15	11-01	8-00	70	20	8-03	13	9-00	7	7-00	7	8-03
43	8-05	8-02	90	20	8-03	10	7-00	8	8-09	7	8-03
3	9-03	8-04	85	19	8-03	14	9-00	8	8-09	7	8-03
4	10-04	8-04	78	17	6-06	13	9-00	8	8-09	7	8-03
26	7-11	8-04	98	20	8-03	10	7-00	7	7-00	5	6-06
38	10-04	8-04	75	19	8-03	13	9-00	7	7-00	5	6-06
1	11-03	8-10	77	20	8-03	10	7-00	7	7-00	7	8-03
18	9-10	8-10	85	20	8-03	13	9-00	7	7-00	8	8-03
22	9-04	8-10	88	20	8-03	13	9-00	6	6-03	8	8-03
24	9-02	8-10	87	19	8-03	14	9-00	7	7-00	6	7-06
46	9-03	8-10	90	18	7-00	8	6-03	7	7-00	7	8-03

(continued on next page)

TABLE 12 (continued)

Subject	CA	MA	IQ	Raw Scores and Perceptual Age Equivalents							
				Figure-Ground Discrimination		Form Constancy		Position in Space		Spatial Relationships	
				RS	PA	RS	PA	RS	PA	RS	PA
Mental Age Range: 9-00 to 10-11 Years											
17	11-03	9-00	77	17	6-06	11	7-06	7	7-00	5	6-06
40	11-04	9-00	78	20	8-03	14	9-00	7	7-00	6	7-06
2	11-03	9-02	80	18	7-00	6	5-06	7	7-00	7	8-03
42	9-04	9-06	96	20	8-03	9	6-09	8	8-09	6	7-06
6	10-11	9-08	84	20	8-03	11	7-06	8	8-09	7	8-03
45	9-05	9-08	96	20	8-03	13	9-00	8	8-09	7	8-03
7	10-00	9-10	91	20	8-03	16	9-00	8	8-09	8	8-03
Mental Age Range: 11-00 to 11-11 Years											
16	11-04	11-08	96	20	8-03	16	9-00	7	7-00	8	8-03

TABLE 13

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND THREE DERIVED SCORES ON THE STANFORD-BINET: FIRST EVALUATION, 1968-1969

Subject	CA	MA	IQ	Raw Scores		
				Conceptual-Language Functions	Visuo-Motor Functions	Auditory Memory Functions
Mental Age Range: 5-00 to 6-11 Years						
32	7-07	5-04	62	10	8	0
21	8-04	5-06	60	9	12	0
48	8-11	5-08	59	18	8	0
44	8-08	6-02	66	42	8	0
39	7-04	6-07	83	38	10	8
47	7-00	6-08	89	38	18	0
20	8-01	6-09	76	46	16	10
Mental Age Range: 7-00 to 8-11 Years						
19	7-10	7-00	80	32	40	6
5	11-01	7-02	64	50	12	6
11	9-05	7-02	70	46	18	8
27	7-10	7-02	85	28	18	18
8	10-04	7-04	68	46	12	14
23	9-06	7-04	72	38	18	6
41	8-07	7-04	79	60	18	0
30	7-09	7-05	90	58	10	8
12	10-01	7-06	71	52	28	10
37	8-03	7-06	81	60	18	8
28	9-05	7-06	74	46	18	18
14	9-10	7-08	73	52	18	16
9	11-00	7-10	69	66	18	14
10	10-00	7-10	73	76	18	0
25	10-02	7-10	72	58	12	14
35	9-04	7-10	77	52	52	6
15	11-01	8-00	70	52	28	24
43	8-05	8-02	90	60	18	24
3	9-03	8-04	85	78	30	6

(continued on next page)

TABLE 13 (continued)

Subject	CA	MA	IQ	Raw Scores		
				Conceptual-Language Functions	Visuo-Motor Functions	Auditory Motor Functions
Mental Age Range: 7-00 to 8-11 Years						
4	10-04	8-05	78	92	12	14
26	7-11	8-04	98	80	12	68
38	10-04	8-04	75	84	18	26
1	11-03	8-10	77	74	28	36
18	9-10	8-10	85	92	34	30
22	9-04	8-10	88	96	54	6
24	9-02	8-10	87	112	28	24
46	9-03	8-10	90	132	12	20
Mental Age Range: 9-00 to 10-11 Years						
17	11-03	9-00	77	92	28	26
40	11-04	9-00	78	90	40	28
2	11-03	9-02	80	100	46	42
42	9-04	9-06	96	146	48	18
6	10-11	9-08	84	148	48	28
45	9-05	9-08	96	78	82	30
7	10-00	9-10	91	132	40	44
Mental Age Range: 11-00 to 11-11 Years						
16	11-04	11-08	96	205	86	54

TABLE 14

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND RAW SCORES OF THE BENDER VISUAL MOTOR GESTALT TEST: FIRST EVALUATION, 1968-1969

Subject	CA	MA	IQ	Raw Scores					
				Satisfactory Gestalts-Memory	Simplified Gestalts-Memory	Fragmented Gestalts-Memory	Satisfactory Gestalts-Perception	Simplified Gestalts-Perception	Fragmented Gestalts-Perception
Mental Age Range: 5-00 to 6-11 Years									
32	7-07	5-04	62	0	5	4	0	5	4
21	8-04	5-06	60	0	9	0	0	9	0
48	8-11	5-08	59	0	5	4	0	5	4
44	8-08	6-02	66	0	5	4	0	5	4
39	7-04	6-07	83	0	7	2	0	7	2
47	7-00	8-08	89	7	2	0	4	5	0
20	8-01	6-09	76	2	7	0	4	5	0
Mental Age Range: 7-00 to 8-11 Years									
19	7-10	7-00	80	2	7	0	8	1	0
5	11-01	7-02	64	0	6	3	0	5	4
11	9-05	7-02	70	0	6	3	3	5	1
27	7-10	7-02	85	0	7	2	3	4	2
8	10-04	7-04	68	1	5	3	3	4	2
23	9-06	7-04	72	1	8	0	3	6	0
41	8-07	7-04	79	0	7	2	2	6	1
30	7-09	7-05	90	0	6	3	0	6	3

(continued on next page)

TABLE 14 (continued)

Sub-ject	CA	MA	IQ	Raw Scores: Satisfactory Gestalts-Memory	Simplified Gestalts-Memory	Fragmented Gestalts-Memory	Satisfactory Gestalts-Perception	Simplified Gestalts-Perception	Fragmented Gestalts-Perception
Mental Age Range: 7-00 to 8-11 Years									
12	10-01	7-06	71	1	8	0	3	6	0
37	8-03	7-06	81	2	7	0	2	7	0
28	9-05	7-06	74	1	8	0	2	7	0
14	9-10	7-08	73	0	7	2	0	8	1
9	11-00	7-10	69	0	8	1	3	6	0
10	10-00	7-10	73	1	8	0	2	7	0
25	10-02	7-10	72	4	5	0	1	7	1
35	9-04	7-10	77	4	5	0	5	4	0
15	11-01	8-00	70	1	8	0	3	6	0
43	8-05	8-02	90	1	8	0	2	7	0
3	9-03	8-04	85	0	8	1	2	5	2
4	10-04	8-04	78	0	9	0	2	7	0
26	7-11	8-04	98	1	5	3	2	6	1
38	10-04	8-04	75	0	6	3	1	7	1
1	11-03	8-10	77	2	7	0	7	2	0
18	9-10	8-10	85	4	5	0	6	3	0
22	9-04	8-10	88	5	4	0	5	4	0
24	9-02	8-10	87	1	7	1	0	9	0
46	9-03	8-10	90	3	6	0	3	6	0

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TABLE 14 (continued)

Sub-ject	CA	MA	IQ	Raw Scores					
				Satisfactory Gestalts-Memory	Simplified Gestalts-Memory	Fragmented Gestalts-Memory	Satisfactory Gestalts-Perception	Simplified Gestalts-Perception	Fragmented Gestalts-Perception
Mental Age Range: 9-00 to 10-11 Years									
17	11-03	9-00	77	0	9	0	0	9	0
40	11-04	9-00	78	2	6	1	1	7	1
2	11-03	9-02	80	1	8	0	2	7	0
42	9-04	9-06	96	1	7	1	2	6	1
6	10-11	9-08	84	4	5	0	2	7	0
45	9-05	9-08	96	6	3	0	7	2	0
7	10-00	9-10	91	5	4	0	6	3	0
Mental Age Range: 11-00 to 11-11 Years									
16	11-04	11-08	96	1	7	1	2	7	0

Note: Gestalts were evaluated on a basis of performance commensurate with chronological ages rather than mental ages of children.

TABLE 15

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND DERIVED SCORES OF THE MURPHY-DURRELL READING READINESS ANALYSIS: FIRST EVALUATION, 1968-1969

Subject	CA	MA	IQ	Raw Scores				
				Capital Letters	Lower-case Letters	Initial Phonemes	Final Phonemes	Total Phonemes
Mental Age Range: 5-00 to 6-11 Years								
32	7-07	5-04	62	4	2	0	0	0
21	8-04	5-06	60	25	15	30	6	36
48	8-11	5-08	59	25	25	32	10	42
44	8-08	6-02	66	20	14	17	5	22
39	7-04	6-07	83	26	22	35	8	43
47	7-00	8-08	89	24	23	35	9	44
20	8-01	6-09	76	26	26	37	8	45
Mental Age Range: 7-00 to 8-11 Years								
19	7-10	7-00	80	26	23	32	6	42
5	11-01	7-02	64	25	21	32	7	39
11	9-05	7-02	70	26	25	37	9	46
27	7-10	7-02	85	26	26	37	9	46
8	10-04	7-04	68	26	25	37	9	46
23	9-06	7-04	72	26	22	38	8	46
41	8-07	7-04	79	25	24	37	9	46
30	7-09	7-05	90	26	26	38	6	44
12	10-01	7-06	71	26	25	37	10	47

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TABLE 15 (continued)

Subject	CA	MA	IQ	Raw Scores				
				Capital Letters	Lower-case Letters	Initial Phonemes	Final Phonemes	Total Phonemes
Mental Age Range: 7-00 to 8-11 Years								
37	8-03	7-06	81	26	23	38	9	47
28	9-05	7-06	74	26	26	38	10	48
14	9-10	7-08	73	26	26	38	10	48
9	11-00	7-10	69	14	15	35	7	42
10	10-00	7-10	73	26	26	38	10	48
25	10-02	7-10	72	26	26	37	10	47
35	9-04	7-10	77	26	26	37	10	47
15	11-01	8-00	70	26	26	38	10	48
43	8-05	8-02	90	26	26	38	10	48
3	9-03	8-04	85	26	26	36	9	45
4	10-04	8-04	78	26	26	37	9	46
26	7-11	8-04	98	26	23	38	8	46
38	10-04	8-04	75	26	26	38	10	48
1	11-03	8-10	77	26	26	38	10	48
18	9-10	8-10	85	26	24	38	10	48
22	9-04	8-10	88	26	26	38	10	48
24	9-02	8-10	87	26	26	38	10	48
46	9-03	8-10	90	26	22	38	10	48

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TABLE 15 (continued)

Subject	CA	MA	IQ	Raw Scores				
				Capital Letters	Lower-case Letters	Initial Phonemes	Final Phonemes	Total Phonemes
Mental Age Range: 9-00 to 10-11 Years								
17	11-03	9-00	77	26	26	38	9	47
40	11-04	9-00	78	26	26	38	10	48
2	11-03	9-02	80	26	26	38	10	48
42	9-04	9-06	96	26	26	38	10	48
6	10-11	9-08	84	26	25	38	7	45
45	9-05	9-08	96	26	24	37	10	47
7	10-00	9-10	91	26	25	38	7	45
Mental Age Range: 11-00 to 11-11 Years								
16	11-04	11-08	96	26	26	38	10	48

TABLE 16

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND DERIVED SCORES OF THE DURRELL ANALYSIS OF READING DIFFICULTY: FIRST EVALUATION, 1968-1969

Subject	CA	MA	IQ	Raw Scores							
				Capital Letters	Lower-case Letters	Blends	Primary Visual Memory	Intermediate Visual Memory Total Letters	Intermediate Visual Memory Letters in Sequence	Intermediate Visual Memory Intrusion	Primary Hearing Sounds
Mental Age Range: 5-00 to 6-11 Years											
32	7-07	5-04	62	0	0	DNA[a]	2	DNA	DNA	DNA	DNA
21	8-04	5-06	60	0	0	0	2	34	32	35	16
48	8-11	5-08	59	26	24	4	16	34	33	3	23
44	8-08	6-02	66	11	8	0	4	DNA	DNA	DNA	DNA
39	7-04	6-07	83	26	24	0	4	DNA	DNA	DNA	18
47	7-00	6-08	89	26	23	2	10	27	25	0	17
20	8-01	6-09	76	26	24	8	14	30	29	2	19
Mental Age Range: 7-00 to 8-11 Years											
19	7-10	7-00	80	25	24	0	10	11	11	0	20
5	11-01	7-02	64	22	24	0	10	46	32	47	15
11	9-05	7-02	70	26	25	0	11	DNA	DNA	DNA	19
27	7-10	7-02	85	26	26	11	11	16	13	6	26

(continued on next page)

TABLE 16 (continued)

Sub-ject	CA	MA	IQ	Raw Scores							
				Capital Letters	Lower-case Letters	Blends	Primary Visual Memory	Inter-mediate Visual Memory Total Letters	Inter-mediate Visual Memory Letters in Se-quence	Inter-mediate Visual Memory Intrusion	Primary Hearing Sounds
Mental Age Range: 7-00 to 8-11 Years											
8	10-04	7-04	68	26	26	6	13	48	46	0	19
23	9-06	7-04	72	26	25	9	12	33	30	8	22
41	8-07	7-04	79	26	24	9	11	37	34	5	21
30	7-09	7-05	90	26	26	16	13	73	62	14	26
12	10-01	7-06	71	25	25	0	12	37	36	3	26
37	8-03	7-06	81	26	24	16	12	59	56	6	28
28	9-05	7-06	74	26	26	12	11	40	33	11	25
14	9-10	7-08	73	26	26	16	20	115	112	4	27
9	11-00	7-10	69	12	10	0	9	38	35	18	16
10	10-00	7-10	73	26	26	14	11	64	60	32	29
25	10-02	7-10	72	26	25	5	11	43	42	0	18
35	9-04	7-10	77	26	26	16	10	60	57	6	28
15	11-01	8-00	70	26	26	16	20	111	110	13	28
43	8-05	8-02	90	26	26	6	13	52	48	10	27
3	9-03	8-04	85	26	26	11	16	54	52	4	25
4	10-04	8-04	78	26	26	16	18	79	73	11	27
26	7-11	8-04	98	26	25	14	12	54	52	4	21
38	10-04	8-04	75	26	26	14	12	56	54	9	27

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TABLE 16 (continued)

Subject	CA	MA	IQ	Raw Scores							
				Capital Letters	Lower-case Letters	Blends	Primary Visual Memory	Intermediate Visual Memory Total Letters	Intermediate Visual Memory Letters in Sequence	Intermediate Visual Memory Intrusion	Primary Hearing Sounds
Mental Age Range: 7-00 to 8-11 Years											
1	11-03	8-10	77	26	26	10	18	96	92	8	27
18	9-10	8-10	85	26	25	16	16	68	63	6	26
22	9-04	8-10	88	26	26	16	14	77	71	36	25
24	9-02	8-10	87	26	26	15	11	75	66	10	28
46	9-03	8-10	90	26	22	13	5	67	51	13	23
Mental Age Range: 9-00 to 10-11 Years											
17	11-03	9-00	77	26	26	16	17	110	104	9	28
40	11-04	9-00	78	26	26	7	12	60	54	49	27
2	11-03	9-02	80	26	24	16	15	117	115	2	19
42	9-04	9-06	96	26	26	13	14	73	69	41	23
6	10-11	9-08	84	26	26	16	11	58	51	8	24
45	9-05	9-08	96	26	26	16	14	102	98	9	28
7	10-00	9-10	91	26	26	0	13	71	62	30	26
Mental Age Range: 11-00 to 11-11 Years											
16	11-04	11-08	96	26	26	15	14	77	72	16	26

[a] DNA indicates that the particular test was not administered to a child. In some instances, tasks were attempted but the child was unable to proceed in view of the level of difficulty of the requirement. In other instances, the writer made no attempt to administer certain subtests which appeared to exceed current levels of performance of a child. The latter judgments were confined to the Durrell Analysis of Reading Diff.

TABLE 17

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND DERIVED SCORES OF THE DURRELL ANALYSIS OF READING DIFFICULTY: FIRST EVALUATION, 1968-1969

Subject	CA	MA	IQ	Raw Scores							
				Intermediate Hearing Sounds							
				Total Consonants	Total Vowels	Sounds in Sequence	Intrusion	Word Recognition	Oral Reading Recall	Silent Reading Recall	Listening Comprehension Recall
				Mental Age Range: 5-00 to 6-11 Years							
32	7-07	5-04	62	DNA	DNA	DNA	DNA	0	DNA	DNA	8
21	8-04	5-06	60	DNA	DNA	DNA	DNA	2	DNA	DNA	3
48	8-11	5-08	59	25	10	34	7	48	21	12	13
44	8-08	6-02	66	DNA	DNA	DNA	DNA	0	DNA	DNA	19
39	7-04	6-07	83	DNA	DNA	DNA	DNA	2	DNA	DNA	20
47	7-00	6-08	89	DNA	DNA	DNA	DNA	4	1	DNA	22
20	8-01	6-09	76	DNA	DNA	DNA	DNA	7	3	DNA	17
				Mental Age Range: 7-00 to 8-11 Years							
19	7-10	7-00	80	23	1	23	11	7	4	DNA	20
5	11-01	7-02	64	33	9	39	23	4	3	DNA	21
11	9-05	7-02	70	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
27	7-10	7-02	85	62	28	88	13	17	6	4	23
8	10-04	7-04	68	63	26	88	36	31	9	DNA	DNA
23	9-06	7-04	72	DNA	DNA	DNA	DNA	8	2	DNA	15
41	8-07	7-04	79	60	27	85	14	4	3	DNA	18

(continued on next page)

TABLE 17 (continued)

Sub-ject	CA	MA	IQ	Raw Scores							
				Intermediate Hearing Sounds				Word Recog-nition	Oral Reading Recall	Silent Reading Recall	Listening Compre-hension Recall
				Total Conso-nants	Total Vowels	Sounds in Se-quence	Intrusion				
Mental Age Range: 7-00 to 8-11 Years											
30	7-09	7-05	90	64	27	89	31	39	19	7	18
12	10-01	7-06	71	DNA	DNA	DNA	DNA	10	3	0	16
37	8-03	7-06	81	57	27	80	13	30	19	84	22
28	9-05	7-06	74	65	23	86	5	37	10	23	21
14	9-10	7-08	73	66	35	100	15	80	DNA	DNA	1
9	11-00	7-10	69	DNA	DNA	DNA	DNA	4	3	DNA	3
10	10-00	7-10	73	54	26	77	22	37	20	35	23
25	10-02	7-10	72	64	17	81	4	19	8	4	21
35	9-04	7-10	77	73	30	102	7	48	21	7	17
15	11-01	8-00	70	71	37	107	7	82	21	38	15
43	8-05	8-02	90	73	30	99	9	18	15	7	21
3	9-03	8-04	85	DNA	DNA	DNA	DNA	17	8	DNA	4
4	10-04	8-04	78	73	32	105	10	68	30	72	32
26	7-11	8-04	98	62	16	77	7	22	15	16	25
38	10-04	8-04	75	66	16	82	5	35	21	77	20
1	11-03	8-10	77	65	25	90	16	75	31	117	21
18	9-10	8-10	85	67	22	85	7	44	14	49	18
22	9-04	8-10	88	66	27	90	11	31	15	9	22
24	9-02	8-10	87	54	17	69	12	28	17	9	24
46	9-03	8-10	90	64	18	81	21	10	9	5	25

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TABLE 17 (continued)

Sub-ject	CA	MA	IQ	Raw Scores							
				Intermediate Hearing Sounds							
				Total Conso-nants	Total Vowels	Sounds in Se-quence	Intrusion	Word Recog-nition	Oral Reading Recall	Silent Reading Recall	Listening Compre-hension Recall
Mental Age Range: 9-00 to 10-11 Years											
17	11-03	9-00	77	63	33	93	13	66	28	104	24
40	11-04	9-00	78	47	4	50	4	15	10	25	18
2	11-03	9-02	80	67	34	100	18	76	15	7	18
42	9-04	9-06	96	72	34	104	10	49	22	85	21
6	10-11	9-08	84	36	24	54	39	33	17	52	21
45	9-05	9-08	96	73	39	112	6	49	20	65	17
7	10-00	9-10	91	36	7	43	7	8	8	DNA	24
Mental Age Range: 11-00 to 11-11 Years											
16	11-04	11-08	96	67	33	98	12	43	22	102	36

TABLE 18

STANDARD DEVIATIONS OF PERFORMANCES OF CHILDREN ON CLINICAL TESTS DURING FIRST, SECOND, AND THIRD EVALUATION PERIODS

Subtests, Total Tests, and Derived Scores	Standard Deviations		
	First Evaluation	Second Evaluation	Third Evaluation
Stanford-Binet[a]			
IQ	9.41		10.24
Mental Age	13.75		14.79
Conceptual-Language Functions	39.06		52.66
Visuo-Motor Functions	18.24		24.67
Auditory Memory Functions	15.22		14.26
Illinois Test of Psycholinguistic Abilities			
Auditory Decoding	6.70	5.10	3.66
Visual Decoding	3.01	2.64	1.87
Auditory-Vocal Association	2.84	2.88	2.19
Visual-Motor Association	4.76	3.99	2.54
Vocal Encoding	4.90	5.09	4.87
Auditory-Vocal Automatic	3.23	3.59	2.85
Motor Encoding	3.13	4.01	3.00
Auditory-Vocal Sequential	6.32	3.83	4.30
Visual-Motor Sequential	2.87	6.12	5.56
Total ITPA	22.48	19.48	19.82
Frostig Developmental Test of Visual Perception			
Figure-Ground Discrimination	3.59	2.86	2.72
Form Constancy	3.06	3.32	2.10
Position in Space	1.40	0.98	0.85
Spatial Relationships	1.76	1.33	1.21

[a] The Stanford-Binet was administered during two evaluation periods.

(continued on next page)

TABLE 18 (continued)

Subtests, Total Tests, and Derived Scores	Standard Deviations		
	First Evaluation	Second Evaluation	Third Evaluation
Detroit Tests of Learning Aptitude			
Auditory Attention Span--Unrelated Words (Simple Score)	5.40	5.13	5.70
Auditory Attention Span--Unrelated Words (Weighted Score)	32.76	30.43	36.79
Auditory Attention Span--Related Words	12.34	12.73	12.45
Visual Attention Span--Objects (Simple Score)	8.85	8.67	7.50
Visual Attention Span--Objects (Weighted Score)	54.77	52.80	45.51
Visual Attention Span--Letters	7.76	8.02	9.76
Disarranged Pictures	8.09	9.81	9.88
Murphy-Durrell Reading Readiness Analysis			
Capital Letters	2.08	2.08	0.64
Lower-case Letters	3.06	2.32	1.84
Initial Phonemes	5.54	2.76	0.71
Final Phonemes	1.42	1.72	0.51
Total Phonemes	4.55	4.17	1.10
Bender Visual Motor Gestalt Test			
Satisfactory Figures--Memory	1.82	1.81	1.92
Simplified Figures--Memory	1.64	1.58	1.67
Fragmented Figures--Memory	1.30	1.06	1.08
Satisfactory Figures--Perception	2.10	1.53	2.36
Simplified Figures--Perception	1.84	1.23	2.10
Fragmented Figures--Perception	1.19	1.10	1.32

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TABLE 18 (continued)

Subtests, Total Tests, and Derived Scores	Standard Deviations		
	First Evaluation	Second Evaluation	Third Evaluation
Durrell Analysis of Reading Difficulty			
Capital Letters	-0.0	-0.0	-0.0
Lower-case Letters	1.01	0.59	-0.0
Blends	3.66	3.27	1.64
Primary Visual Memory	3.19	2.04	1.95
Primary Hearing Sounds	2.95	2.67	1.14
Intermediate Visual Memory			
Total Words	2.30	2.02	3.33
Total Letters	22.34	20.66	21.42
Total Letters in Sequence	22.56	20.71	22.11
Intrusion	10.15	10.03	8.18
Intermediate Hearing Sounds			
Total Words	3.30	2.42	3.69
Total Consonants	11.40	16.07	4.86
Total Vowels	7.52	6.87	4.64
Total Sounds in Sequence	17.35	22.66	10.50
Intrusion	8.48	8.93	8.41
Word Recognition	19.15	17.59	15.52
Oral Reading Recall	5.82	6.34	6.76
Silent Reading Recall	36.93	32.76	29.53
Listening Comprehension Recall	5.25	5.51	6.16

formances of children seemed to preclude assumptions of homogeneity and universal characteristics. Moreover, even these somewhat consistent performances on the Visual-motor sequential subtest became considerably more variable with the second and third evaluations (see Table 18; variances fluctuated from deviations of 2.87 during the first evaluation to 6.12 during the second and 5.56 during the third). In addition, like other subtests of this battery, this particular task certainly cannot be considered as tapping "pure" functions; and subtests such as Vocal encoding, Auditory decoding, and Auditory-vocal sequential recall seemed to be especially likely to vary with emotional overlay and excessive anxiety of children. To be sure, those manifestations still reflect behavior and performance characteristics of children; yet in describing such patterns, it is of paramount importance to recognize that children, for different reasons, may be performing at low levels. These sources are not necessarily synonymous with "innate" cognitive deficits.

2. Observations of variabilities among and within performances of children on the Illinois Test of Psycholinguistic Abilities seemed to be further confirmed in the performances of children on five subtests of the Detroit Tests of Learning Aptitude. Again, variance characterized performances of children across all mental age level ranges. However, in contrast to results of the ITPA

evaluations, these tendencies were apparent.

(a) Greater numbers of children functioned less well on the Auditory attention span subtests for unrelated and related words than on visual attention span and disarranged pictures subtests.

(b) These tendencies were evident not only on the basis of test performance scores but also in the responses of children during processes of task accomplishment. For example, it was not uncommon for children to hesitate in recalling words because they perceived that they "could not remember." Such reactions were especially prominent as word series and sentences became more lengthy. Thus it was not surprising that performances of children on both auditory attention span subtests were quite irregular; many children seemed to oscillate between relatively accurate recall and minimal or total lack of retention.

(c) Further, perhaps as a result of differing task requirements, more children tended to function on levels commensurate with or exceeding their mental age levels. Specific cognitive strengths and weaknesses of children appeared to be more clearly reflected in child performances on these tasks than in accomplishments on some of the ITPA subtests.

(d) As another apparent result of differences in test structure and performances of the children, standard deviations of four of the five subtests administered exceeded those of subtests of the ITPA. The Auditory attention span for unrelated words (simple score) did not follow this pattern (a standard deviation of 5.40).

3. Variance among and within performances of children on the Frostig Developmental Test of Visual Perception was evident but tended to be much more restricted in range than individual differences revealed in performances on the ITPA and Detroit tests. Standard deviations on the Figure-ground discrimination, Form constancy, Position in space, and Spatial relationships subtests were 3.59, 3.06, 1.40, and 1.76, respectively. Further, differences among performances of individual children on the four subtests were somewhat less diverse. These results may have been reflections of these factors: that many children obtained maximum scores and the allowance for possible variance was considerably limited, particularly with respect to the last two subtests. Further, although each of these subtests was characterized by unique requirements, they were at the same time closely related. Thus, although some children did manifest greater to lesser degrees of impairment along each of these dimensions of visual and visuo-motor functioning which were manifested in variabilities among scores of individual children, it was possible that these tasks required intellectual abilities more similar than those tapped by subtests included in

some other test batteries. It was perhaps for this reason that performances of children having mental ages between 5-00 and 6-11 years tended to be more uniform across the four subtests.

4. Three principal scores were compiled from performances of children on the Stanford-Binet. They were conceptual-language functions, visuo-motor functions, and auditory memory functions. Since items included in these scores also served as a basis for determinations of mental age, it was anticipated that higher and lower accumulative raw scores for each of the three functions would correspond to higher and lower mental age levels. Scores for individual children inevitably would vary in light of the fact that numbers of items and possible accumulations of two-point credits, the basis for compilation, differed across the three derived functions.

In general, performances of children of 5-00 to 6-11 years in mental ages tended to be lower; children of mental ages 9-00 to 11-11 years were more consistently higher; and the large number of children of 7-00 to 8-11 years in mental age were quite diverse. Moreover, on those items conceived to involve visuo-motor functioning, greater numbers of children tended to accomplish tasks more adequately than those requiring auditory memory functions. These findings seemed to confirm tendencies of performances of children on the Detroit Tests. It was evident that a number of children, especially across the last three mental age ranges, were able to accomplish conceptual-language tasks commensurate with their chronological age levels; greater numbers of children, however, did have difficulty with Verbal Absurdity items.

5. Performances of children on the Bender Visual Motor Gestalt Test, evaluated on a basis of chronological rather than mental age, were interpreted in terms of six scores concerning numbers of satisfactory, simplified, and fragmented gestalts obtained during memory and perceptual presentations. Although there was a tendency for children to perform at a slightly higher level of functioning (copying from cards), individual performances did not always follow this trend; a few children functioned equally well or more adequately during memory presentations. With the exception of children 20 and 47, who displayed higher levels of performance under both conditions, children of mental ages 5-00 to 6-11 years more consistently tended to function less well and had higher levels of fragmentation of figures. Across the other three mental age ranges, performances of children were quite variable and did not appear to correlate to a high degree with either chronological or mental age levels. The hypothesis might be advanced that these scores to a greater extent were reflections of particular cognitive strengths and weaknesses of children, and in some instances these performances were consistent with achievements of children on similar tasks. Yet, like many other facets of the study of behavior

and performances of these children, there were exceptions to these consistencies which were not upheld in the second and third evaluations.

6. With the exception of children of mental ages 5-00 to 6-11 years who were quite uncertain of letter names and experienced some problems with phoneme discrimination, the majority of other children had only mild difficulty with tasks on the Murphy-Durrell Reading Readiness Analysis. In particular, some children still tended to reverse and invert certain letters; these difficulties were reflected in lower performances on the identification of Lower-case letters subtest. Also, some children did make limited numbers of errors on the sound discrimination tasks of the phoneme subtests, although these were not revealed to be of any serious degree of severity.

7. Of the 42 children in the sample, only 23 were able to accomplish tasks on all of the subtests administered on the Durrell Analysis of Reading Difficulty. Specifically, children of mental ages 5-00 to 6-11 years either were consistently unable to complete items or functioned at extremely low levels. Children across the other mental age ranges were more variable; subtests not administered were confined primarily to Intermediate hearing sounds and Silent reading recall tasks. These findings were not surprising in light of the complexity of silent reading tasks and observations

that a number of children revealed lower performances on some tasks requiring higher-order auditory functions. Children across the three highest mental age ranges performed at almost optimal levels on Capital and Lower-case letters, Primary hearing sounds, and, to a lesser degree, Blends subtests. In large part, these findings were consonant with those revealed in performances on the Murphy-Durrell Reading Readiness Analysis. The fact that the Primary visual memory subtest required multiple choice selections, which seemed to be quite difficult for a number of children, may have accounted for the somewhat discrepant performances on visual subtests of the Detroit Tests and Durrell Analysis. Listening comprehension recall tasks generally were much more easily accomplished than either Oral or Silent reading recall.

Among performances of children, Intermediate visual memory, Intermediate hearing sounds, Word recognition, and Silent reading recall achievements were most variable; more primary subtests and Oral reading and Listening comprehension subtests revealed less deviation among performances.

Emotional behavior. Like their class and test performances, emotional behavior among and within children also varied a great deal. The dynamics of much of this behavior across the six first-year classes has been described already in the previous section on teachers, their classes, and educational strategies. The following points represent an attempt merely to summarize some of the specific characteristics of emotional behavior of children and their apparent influences on learning processes.

Characteristics of children included these patterns of emotional behavior.

(a) observations where little emotional overlay appeared to be in evidence and children were able to perform academic tasks over sustained periods of time with minimal distraction and inattentiveness;

(b) manifestations of mild to moderate anxiety, hyperactivity, and distractibility where concentration directed toward specific problem-solving tasks was quite limited and unstable;

(c) withdrawal symptoms where children were quite uncommunicative with their peers and teachers and, although not resistant to learning situations, they less actively participated in such processes; and

(d) manifestations of severe pathology revealing high degrees of inconsistency and vacillation in temperament, low levels of tolerance for and overreaction to class events, and chronic difficulties in relating positively to their peers and teachers. The first three patterns more generally characterized behavior of the children.

Although the full extent and ways that emotional overlay over time affected learning processes in children were impossible to determine from short-range evaluations, observations raised these issues.

(a) To greater or lesser degrees, emotional disorders may have influenced the amount and organization of information which children were able to assimilate. These effects on children were conceived to vary in accordance with their changing psychological states; e.g., vacillations in attention to specific learning tasks; different levels of tolerance for learning.

(b) High expectancies for failure and reticence of some children to engage in learning processes may have severely curtailed their range of and openness to possibilities for gaining knowledge. Specifically, acquisition of knowledge implies a readiness for adapting to new and different experiences. Reluctance of some children to become involved in risk-taking situations may have been reflected in a closure to accommodation to unfamiliar concepts and knowledge.

Too, the care with which some children approached tasks fluctuated a great deal with their attitudes and feelings toward learning. This dimension of behavior of children appeared to be especially responsive to the character of teacher interactions.

(c) Some children experienced considerable difficulty in inhibiting responses during processes of task accomplishment in class and individual evaluation sessions. Moreover, these responses often were cast in terms of personal experiences, with little expansion to external problem-solving situations. Such manifestations not only tended to interrupt continuity of learning experiences but also were conceived to be reflective of ways in which the perceptions of some children perhaps limited their acquisition of knowledge.

Summary of first-year observations. To varying degrees, children in this study experienced difficulties in accomplishing language, reading, and/or conceptual tasks. With some exceptions in children of mental ages of 5-00 to 6-11 years, such learning problems were found to be extremely variable across all mental age levels. Children displayed unique patterns of cognitive strength and weakness and characteristics of emotional behavior. As well as their exposure to widely variant learning environments, these factors were conceived as contributing in substantial ways to individual differences paramount among children.

Clinical Observations of Child Performance and Behavior during the Second Year

During the course of the second year, frequent classroom observations were continued, and children were evaluated on the basis of clinical tests prior to the commencement and at the termination of the remediation program. Of particular interest were these determinations: (a) descriptions of cognitive performance and behavioral characteristics; (b) assessments of performance and behavioral changes in children; and (c) assessments of variabilities and consistencies in performances and behavior across the first, second, and third evaluation periods and examination of potential sources of individual differences. This discussion thus will include: (a) an overview of clinical observations and diagnostic evaluations; (b) considerations of more specific characteristics of performance on clinical tests; (c) presentations of four learning profiles selected from each of the four mental age ranges; and (d) considerations of emotional behavior of children.

An overview of clinical observations and diagnostic evaluations. Clinical observations and diagnostic evaluations of children the second year revealed these findings.

1. Among their performances on clinical tests, children continued to display wide variabilities during each of the evaluation periods the second year. Moreover, the majority of individual subtest and derived scores fluctuated in degrees of variance across the first, second, and third evaluations. From the standard deviations presented in Table 18, it is evident that these changes in variability did not always move in a consistent direction; e.g., from greater to lesser degrees of variability over the three evaluations. At least five conditions seemed to have possible bearing

on these patterns.

(a) There were tasks which generally were more easily accomplished by children; on these subtests, the majority of children approached test ceilings and accordingly performances tended to become increasingly less variable over the evaluation sessions. A primary example of this condition was reflected in the performances of children on the Murphy-Durrell Reading Readiness Analysis.

(b) Some subtests seemed to be especially liable to fluctuation. For example, on subtests such as Vocal encoding of the Illinois Test of Psycholinguistic Abilities and reproduction of figures on the Bender Visual Motor Gestalt Test, performances of children appeared to be highly unstable and varied considerably over the three evaluations.

(c) With respect to those few subtests where performances of children remained approximately the same over the three evaluations, it was conceived that either children were not changing substantially in terms of their performances on those subtests, or children maintained similar relative positions within the sample in terms of the degrees to which they were changing. In light of general trends of growth in children, which will be discussed in Chapter V, the latter consideration seemed to be a more appropriate explanation.

(d) There were performance scores such as conceptual-language and visuo-motor functions of the Stanford-Binet which tended to become more variable from the first to the third evaluation. On these tasks, it appeared that rates of growth among children differed considerably. Thus, as children grew older, discrepancies between performances of those who learned at more rapid rates and in more efficient ways and those who maintained slower rates of gaining knowledge widened. Although variability of subtest scores on the Durrell Analysis of Reading Difficulty did not consistently tend in the same direction, this condition seemed to apply also in several instances.

2. Across their performances on individual subtests during each second-year evaluation, the majority of children continued to display a great deal of variability, which thus supported findings of the first year that their individual performances were characterized by considerable multidimensionality. In comparison with results of the first evaluation, however, data revealed that greater numbers of test performances of children during second and third sessions more closely approximated or exceeded mental ages and sometimes chronological ages of children. On some subtests of the first evaluation, in particular those of the Illinois Test of Psycholinguistic Abilities, performances of children had tended to be somewhat dissonant with their achievements on other test batteries, subsequent evaluations, and observations of classroom per-

formances. This point and possible sources of variance were considered in the discussion of first-year clinical observations of children.

There was one further observation of performances of individual children over the first and second evaluations which seemed to be of substantial importance. Although performances of children varied across the two evaluation periods, learning functions which were most severely impaired changed to lesser degrees, and, in certain instances, remained quite consistent with or revealed evidence of regression from first-year performances. Too, although not specifically reflected in the analysis of variance which generally disclosed that performances of children changed significantly during the two-year period, such tendencies sometimes obtained over all three evaluations. These patterns appeared to be especially prominent among children who suffered from severe auditory impairments.

3. Although IQ scores of the majority of children remained relatively constant over the two-year period, generally revealing variations of one to five points, performances of nine children displayed changes of six to 10 points in positive and negative directions. In no way were these fluctuations conceived to reflect influences of the remediation program. Again, these were viewed as manifestations of prevalent variabilities, characteristic of

cognitive functioning of the children.

4. There was considerable variation and positive change in performances of children over the three evaluation periods on subtests of fundamental learning abilities and measures of more general academic achievements. At the same time, however, from both classroom observations and test data, it did appear that predominant strengths and weaknesses of children remained relatively stable. This observation seemed to indicate that in spite of greater to lesser degrees of growth in children, their fundamental learning styles were altered in only minimal ways.

5. Although these tendencies were not universal to all children and varied in terms of degrees of severity and differences in approach to task accomplishment, performances on the Stanford-Binet, Illinois Test of Psycholinguistic Abilities, and Detroit Tests of Learning Aptitude revealed that a number of children did experience particular difficulty in recalling information in specified sequences.

Again, such tendencies might lead one to postulate that children in this sample consistently revealed characteristics of auditory memory deficits. Yet, in the view of the writer, such statements require much qualification; for across tasks of recall of unrelated and related words, story details from oral and silent reading subtests, listening comprehension, and sequences of digits forward and reversed, children in this sample displayed no universal patterns of functioning which might be considered to be characteristic strengths or weaknesses.

6. Changes in general levels of performance of children which were evaluated on the basis of Binet IQ, Total ITPA, and Oral and Silent reading subtests on the Durrell Analysis seemed to be related to a constellation of factors. They included these variables.

(a) the extensiveness of total intellectual impairment in terms of numbers and degrees of severity of learning dysfunctions.

(b) the types, severity, and pervasiveness of specific learning disabilities of children. It was pointed out earlier that children who suffered from auditory disorders seemed to be more severely impaired than children who experienced visual disabilities. Although in one sense the severities of learning disorders are relative in that different types of disabilities may have more specific bearing on the acquisition of certain kinds of skills and knowledge than on others, auditory dysfunctions of children in the current study appeared to be especially damaging in that they seriously pervaded both written and oral language abilities and seemed to be extremely difficult to change.

In addition, those children who experienced particular difficulty in comprehending, generalizing, analyzing and synthesizing, and categorizing information were severely impaired as a result of the pervasiveness of such conceptual functions across all intellectual abilities.

(c) the particular cognitive strengths characterizing performances of individual children. As a corollary to the aforementioned point, it appeared that children whose performances were characterized by strong auditory functions were able to acquire reading skills more easily than those whose cognitive strengths were more predominantly visual.

Also, despite their various other specific learning disabilities, children who were able to order and organize information with considerable facility were able to solve problems much more efficiently and more meaningfully utilize knowledge toward the acquisition of further concepts and skills than children who experienced severe disorders of conceptualization.

(d) emotional behavior of children and the extent to which various disorders affected learning processes; e.g., impulsive or reflective ways in which children accomplished tasks; their ability to attend to relevant requirements of problem-solving tasks; their levels of tolerance for engaging in learning situations; ability to function independently; and their openness to learning and willingness to enter into class activities.

(e) the ability of teachers to enhance positive attitudes and feelings in children, to expand the scope of their intellectual strengths, and to aid them in coping more adequately with their learning problems. This last point may seem to be of remote importance in relation to such considerations as the stability of learning styles of children. Yet, like those of the first year, second-year observations revealed that performances of children across all mental ages, who experienced varying types and degrees of severity of impairment, varied a great deal in relation to different teachers. Thus, although there was no way of ascertaining long-range effects on learning styles of children, immediate manifestations of the extent to which children were motivated to engage in learning processes were largely contingent on the teacher variable.

Similar kinds of variabilities in behavior and performances of children were observed in relation to different examiners the second year.

Finally, the variable of chronological age alone did not appear to be related in any systematic way to gains of children across subtests of fundamental learning abilities or general levels of achievement on language, reading, or conceptual tasks.

More specific characteristics of child performance on clinical tests. The following commentaries on performances of children represent brief descriptions of more prominent trends which seemed to evolve over the two evaluation periods. Tables 19 to 35 present test performances of children obtained during the second year.

1. In part, performances of children on the Illinois Test of Psycholinguistic Abilities the second year were consistent with first-year evaluations. Some tendencies changed: The majority of children still experienced language disorders, and variance continued. The following differences were apparent.

(a) Performances of most children on both second and third evaluations revealed marked gains on the majority of subtests.

(b) Although second-evaluation performances commensurate with or exceeding mental age expectancies were prevalent among children across all four ranges, tendencies of children of mental ages 9-00 to 11-12 years to function more consistently at ceiling levels were beginning to emerge. With shifts in mental age positions and gains in levels of achievement of children on the third evaluation, which are represented in Tables 27 and 28, these patterns became even more prominent.

(c) It was evident that more than half of the children during the third evaluation were able to function on consistently high levels on Auditory decoding, Visual decoding, and Vocal encoding subtests. To greater or lesser degrees, these changes in

TABLE 19

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND TOTAL SCORES OF THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES: SECOND EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Auditory Decoding		Visual Decoding		Auditory-Vocal Association		Visual-Motor Association		Vocal Encoding	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 5-00 to 6-11 Years													
32	7-07	5-04	62	26	7-06	17	8-09	9	3-11	19	7-06	8	3-10
21	8-04	5-06	60	14	4-05	15	7-03	10	4-02	11	4-08	14	5-08
48	8-11	5-08	59	23	6-05	12	5-10	19	6-10	12	5-01	9	4-01
44	8-08	6-02	66	29	8-10+	16	7-10	17	6-01	17	6-10	14	5-08
39	7-04	6-07	83	21	5-11	15	7-03	18	6-06	17	6-10	7	3-06
47	7-00	6-08	89	14	4-05	17	8-09	18	6-06	22	8-07	17	6-07
20	8-01	6-09	76	20	5-08	16	7-10	21	7-08	22	8-07	17	6-07
Mental Age Range: 7-00 to 8-11 Years													
19	7-10	7-00	80	15	4-07	17	8-09	18	6-06	11	4-08	22	8-11+
5	11-01	7-02	64	27	7-11	16	7-10	16	5-10	23	8-11	15	6-00
11	9-05	7-02	70	31	8-10+	17	8-09	22	8-03	19	7-06	19	7-04
27	7-10	7-02	85	15	4-07	16	7-10	15	5-06	13	5-05	13	5-04
8	10-04	7-04	68	30	8-10+	15	7-03	23	9-00	20	7-10	23	8-11+
23	9-06	7-04	72	28	8-10	15	7-03	16	5-10	20	7-10	17	6-07
41	8-07	7-04	79	30	8-10+	13	6-03	21	7-08	20	7-10	9	4-01
30	7-09	7-05	90	28	8-10	16	7-10	17	6-01	15	6-01	19	7-04

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TABLE 19 (continued)

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Auditory Decoding		Visual Decoding		Auditory-Vocal Association		Visual-Motor Association		Vocal Encoding	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 7-00 to 8-11 Years													
12	10-01	7-06	71	30	8-10+	20	8-09+	17	6-01	21	8-03	20	7-09
37	8-03	7-06	81	24	6-09	15	7-03	22	8-03	17	6-10	21	8-11
28	9-05	7-06	74	26	7-06	15	7-03	22	8-03	15	6-01	26	8-11+
14	9-10	7-08	73	27	7-11	12	5-10	16	5-10	21	8-03	15	6-00
9	11-00	7-10	69	32	8-10+	13	6-03	17	6-01	7	3-04	12	5-01
10	10-00	7-10	73	28	8-10	17	8-09	20	7-03	22	8-07	18	6-11
25	10-02	7-10	72	29	8-10+	16	7-10	16	5-10	10	4-04	19	7-04
35	9-04	7-10	77	27	7-11	19	8-09+	22	8-03	22	8-07	20	7-09
15	11-01	8-00	70	26	7-06	18	8-09+	17	6-01	21	8-03	27	8-11+
43	8-05	8-02	90	31	8-10+	20	8-09+	20	7-03	20	7-10	19	7-04
3	9-03	8-04	85	28	8-10	17	8-09	21	7-08	15	6-01	18	6-11
4	10-04	8-04	78	30	8-10+	21	8-09	(21)[a]	(7-08)	21	8-03	(18)	(6-11)
26	7-11	8-04	98	25	7-01	16	7-10	20	7-03	15	6-01	23	8-11+
38	10-04	8-04	75	31	8-10+	18	8-09+	22	8-03	18	7-02	21	8-11
1	11-03	8-10	77	27	7-11	21	8-09+	20	7-03	18	7-02	13	5-04
18	9-10	8-10	85	27	7-11	17	8-09+	22	8-03	21	8-03	26	8-11+
22	9-04	8-10	88	23	6-05	15	7-03	23	9-00	21	8-03	24	8-11+
24	9-02	8-10	87	27	7-11	16	7-10	22	8-03	23	8-11	24	8-11+
46	9-03	8-10	90	26	7-06	21	8-09+	20	7-03	19	7-06	21	8-11

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TABLE 19 (continued)

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Auditory Decoding		Visual Decoding		Auditory-Vocal Association		Visual-Motor Association		Vocal Encoding	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 9-00 to 10-11 Years													
17	11-03	9-00	77	31	8-10+	19	8-09+	21	7-08	22	8-07	19	7-04
40	11-04	9-00	78	26	7-06	16	6-10	21	7-08	23	8-11	19	7-04
2	11-03	9-02	80	27	7-11	15	7-03	17	6-01	12	5-01	9	4-01
42	9-04	9-06	96	33	8-10+	23	8-09+	19	6-10	18	7-02	14	5-08
6	10-11	9-08	84	33	8-10+	21	8-09+	22	8-03	21	6-06	22	8-11+
45	9-05	9-08	96	20	5-08	21	8-09+	25	9-00+	15	6-01	16	6-04
7	10-00	9-10	91	28	8-10	18	8-09+	22	8-03	21	6-06	26	8-11+
Mental Age Range: 11-00 to 11-11 Years													
16	11-04	11-08	96	34	8-10+	19	8-09+	22	8-03	21	6-06	30	8-11+

[a] Scores in parentheses indicate entries from first evaluation period. Testing was not completed as a result of class confusion.

TABLE 20

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND TOTAL SCORES OF THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES: SECOND EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Motor Encoding		Auditory-Vocal Automatic		Auditory-Vocal Sequential		Visual-Motor Sequential		Total ITPA	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 5-00 to 6-11 Years													
32	7-07	5-04	62	21	8-08+	11	5-09	14	4-02	11	5-01	136	5-09
21	8-04	5-06	60	13	5-05	0	-2-04	10	3-05	16	6-09	103	4-09
48	8-11	5-08	59	12	5-00	11	5-09	14	4-02	13	5-08	125	5-05
44	8-08	6-02	66	23	8-08+	16	7-07	16	4-07	15	6-04	163	6-10
39	7-04	6-07	83	22	8-08+	15	7-03	18	5-01	8	4-04	141	5-11
47	7-00	6-08	89	18	7-11	12	6-01	19	5-04	27	9-00+	164	6-10
20	8-01	6-09	76	18	7-11	11	5-09	16	4-07	13	5-08	154	6-05
Mental Age Range: 7-00 to 8-11 Years													
19	7-10	7-00	80	19	8-08	9	5-00	28	8-06+	12	5-04	151	6-04
5	11-01	7-02	64	10	4-02	17	8-00	20	5-07	12	5-04	156	6-06
11	9-05	7-02	70	14	5-10	15	7-03	13	3-11	16	6-09	166	7-00
27	7-10	7-02	85	16	6-10	16	7-07	20	5-07	8	4-04	132	5-07
8	10-04	7-04	68	17	7-04	17	8-00	17	4-10	17	7-04	179	7-07
23	9-06	7-04	72	22	8-08+	11	5-09	24	7-00	15	6-04	168	7-01
41	8-07	7-04	79	18	7-11	16	7-07	21	5-11	15	6-04	163	6-10
30	7-09	7-05	90	22	8-08+	17	8-00	19	5-04	9	4-07	162	6-09

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TABLE 20 (continued)

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Motor Encoding		Auditory-Vocal Automatic		Auditory-Vocal Sequential		Visual Motor Sequential		Total ITPA	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 7-00 to 8-11 Years													
12	10-01	7-06	71	21	8-08+	17	8-00	15	4-04	14	6-00	175	7-05
37	8-03	7-06	81	18	7-11	15	7-03	27	8-06	11	5-01	170	7-02
28	9-05	7-06	74	20	8-08+	13	6-06	19	5-04	14	6-00	170	7-02
14	9-10	7-08	73	12	5-00	13	6-06	26	7-10	15	6-04	157	6-07
9	11-00	7-10	69	10	4-02	12	6-01	25	7-04	14	6-00	142	6-00
10	10-00	7-10	73	15	6-04	14	6-10	16	4-07	17	7-04	167	7-00
25	10-02	7-10	72	16	6-10	15	7-03	29	8-06+	9	4-07	159	6-08
35	9-04	7-10	77	12	5-00	14	6-10	22	6-03	19	8-05	177	7-06
15	11-01	8-00	70	20	8-08+	15	7-03	21	5-11	20	9-00	185	8-00
43	8-05	8-02	90	21	8-08+	14	6-10	19	5-04	20	9-00	184	7-11
3	9-03	8-04	85	20	8-08+	18	8-04	28	8-06+	22	9-00+	187	8-01
4	10-04	8-04	78	21	8-08+	19	8-09	22	6-03	14	6-00	(187)	8-01
26	7-11	8-04	98	20	8-08+	13	6-06	37	8-06+	14	6-00	183	7-10
38	10-04	8-04	75	15	6-04	15	7-03	34	8-06+	13	5-08	187	8-01
1	11-03	8-10	77	18	7-11	17	8-00	27	8-06	14	6-00	185	8-00
18	9-10	8-10	85	18	7-11	20	9-01	26	7-10	19	8-05	196	8-10
22	9-04	8-10	88	22	8-08+	13	6-06	25	7-04	18	7-10	184	7-11
24	9-02	8-10	87	23	8-08+	20	9-01	18	5-01	13	5-08	186	8-01
46	9-03	8-10	90	25	8-08+	17	8-00	24	7-00	16	6-09	189	8-03

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TABLE 20 (continued)

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Motor Encoding		Auditory-Vocal Automatic		Auditory-Vocal Sequential		Visual Motor Sequential		Total ITPA	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 9-00 to 10-11 Years													
17	11-03	9-00	77	18	7-11	18	8-04	36	8-06+	19	8-05	203	9-04+
40	11-04	9-00	78	15	6-04	18	8-04	16	4-07	20	9-00	181	7-09
2	11-03	9-02	80	14	5-10	17	8-00	27	8-06	14	6-00	156	6-06
42	9-04	9-06	96	26	8-08+	18	8-04	22	6-03	14	6-00	187	8-01
6	10-11	9-08	84	22	8-08+	17	8-00	10	3-05	15	6-04	178	7-07
45	9-05	9-08	96	26	8-08+	19	8-09	25	7-04	14	6-00	181	7-09
7	10-00	9-10	91	16	6-10	12	6-01	22	6-03	20	9-00	180	7-08
Mental Age Range: 11-00 to 11-11 Years													
16	11-04	11-08	96	19	8-08	20	9-01	20	5-07	17	7-04	202	9-04+

TABLE 21

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST SCORES ON THE DETROIT TESTS OF LEARNING APTITUDE: SECOND EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores and Mental Ages									
				Auditory Attention Span--Unrelated Words		Auditory Attention Span--Related Words		Visual Attention Span--Objects		Visual Attention Span--Letters		Disarranged Pictures	
				RS	MA	RS	MA	RS	MA	RS	MA	RS	MA
Mental Age Range: 5-00 to 6-11 Years													
32	7-07	5-04	62	34	4-09	18	3-03	40	8-03	0	-5-09	4	6-00
21	8-04	5-06	60	23	-3-00	5	-3-00	19	-3-00	3-1	6-06	1	-5-03
48	8-11	5-08	59	35	5-00	33	4-06	33	6-03	4-3	8-03	4	6-00
44	8-08	6-02	66	37	5-09	40	5-03	36	7-03	3-3	7-00	18	9-06
39	7-04	6-07	83	39	6-03	26	4-00	29	5-00	3-1	6-06	8	7-00
47	7-00	6-08	89	37	5-09	29	4-03	42	9-00	3-4	7-03	23	10-09
20	8-01	6-09	76	33	4-06	38	5-00	22	-3-00	3-2	6-09	3	5-09
Mental Age Range: 7-00 to 8-11 Years													
19	7-10	7-00	80	38	6-00	39	5-03	32	6-00	3-2	6-09	13	8-03
5	11-01	7-02	64	38	6-00	39	5-03	38	7-09	4-1	7-06	10	7-06
11	9-05	7-02	70	37	5-09	31	4-06	53	13-00	4-1	7-06	18	9-06
27	7-10	7-02	85	34	4-09	41	5-06	29	5-00	4-2	7-09	8	7-00
8	10-04	7-04	68	43	7-09	46	6-03	42	9-00	5-1	9-00	3	5-09

(continued on next page)

TABLE 21 (continued)

Subject	CA	MA	IQ	Raw Scores and Mental Ages									
				Auditory Attention Span--Unrelated Words		Auditory Attention Span--Related Words		Visual Attention Span--Objects		Visual Attention Span--Letters		Disarranged Pictures	
				RS	MA	RS	MA	RS	MA	RS	MA	RS	MA
Mental Age Range: 7-00 to 8-11 Years													
23	9-06	7-04	72	43	7-09	27	4-00	43	9-03	3-2	6-09	25	11-03
41	8-07	7-04	79	34	4-09	41	5-06	30	5-03	4-2	7-09	19	9-09
30	7-09	7-05	90	39	6-03	40	5-03	40	8-03	4-1	7-06	15	8-09
12	10-01	7-06	71	32	4-03	24	3-09	32	6-00	4-1	7-06	30	12-06
37	8-03	7-06	81	43	7-09	44	6-00	34	6-09	4-1	7-06	22	10-06
28	9-05	7-06	74	40	6-06	39	5-03	37	7-06	4-2	7-09	16	9-00
14	9-10	7-08	73	32	4-03	41	5-06	39	8-00	6-1	9-06	3	5-09
9	11-00	7-10	69	36	5-03	75	11-00	32	6-00	3-4	7-00	5	6-03
10	10-00	7-10	73	35	5-00	38	5-00	52	12-06	4-3	8-03	29	12-03
25	10-02	7-10	72	41	7-00	41	5-06	31	5-09	4-3	8-03	0	-5-03
35	9-04	7-10	77	37	5-09	15	3-00	44	9-09	5-2	9-06	11	7-09
15	11-01	8-00	70	38	6-00	26	4-00	40	8-03	6-1	11-00	42	15-09
43	8-05	8-02	90	40	6-06	18	3-03	39	8-00	4-3	8-03	7	6-09
3	9-03	8-04	85	43	7-09	42	5-06	34	6-09	5-1	9-00	14	8-06
4	10-04	8-04	78	40	6-06	53	7-06	53	13-00	5-1	9-00	22	10-06
26	7-11	8-04	98	53	11-03	63	9-00	54	13-03	5-1	9-00	17	9-03
38	10-04	8-04	75	37	5-09	46	6-03	42	9-00	5-1	9-00	19	9-09
1	11-03	8-10	77	42	7-06	36	4-09	49	11-03	5-4	10-06	9	7-03
18	9-10	8-10	85	44	8-00	35	4-09	38	7-09	4-3	8-03	7	6-09
22	9-04	8-10	88	41	7-00	46	6-03	45	10-00	5-1	9-00	12	8-00

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TABLE 22

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST SCORES ON THE FROSTIG DEVELOPMENTAL TEST OF VISUAL PERCEPTION: SECOND EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores and Perceptual Age Equivalents							
				Figure-Ground Discrimination		Form Constancy		Position in Space		Spatial Relationships	
				RS	PA	RS	PA	RS	PA	RS	PA
Mental Age Range: 5-00 to 6-11 Years											
32	7-07	5-04	62	12	5-03	3	4-00	3	4-09	0	4-00
21	8-04	5-06	60	11	5-00	6	5-06	4	5-00	4	6-00
48	8-11	5-08	59	15	5-09	8	6-03	8	8-09	5	6-06
44	8-08	6-02	66	18	7-00	10	7-00	4	5-00	4	6-00
39	7-04	6-07	83	5	4-00	9	6-09	6	6-03	4	6-00
47	7-00	6-08	89	20	8-03	14	9-00	7	7-00	7	8-03
20	8-01	6-09	76	20	8-03	6	5-06	7	7-00	6	7-06
Mental Age Range: 7-00 to 8-11 Years											
19	7-10	7-00	80	20	8-03	15	9-00	7	7-00	7	8-03
5	11-01	7-02	64	17	6-06	5	5-00	6	6-03	2	5-00
11	9-05	7-02	70	20	8-03	13	9-00	7	7-00	6	7-06
27	7-10	7-02	85	16	6-00	11	7-06	7	7-00	6	7-06
8	10-04	7-04	68	20	8-03	14	9-00	6	6-03	6	7-06
23	9-06	7-04	72	20	8-03	10	7-00	7	7-00	8	8-03
41	8-07	7-04	79	20	8-03	10	7-00	8	8-09	6	7-06

(continued on next page)

TABLE 22 (continued)

Subject	CA	MA	IQ	Raw Scores and Perceptual Age Equivalents							
				Figure-Ground Discrimination		Form Constancy		Position in Space		Spatial Relationships	
				RS	PA	RS	PA	RS	PA	RS	PA
Mental Age Range: 7-00 to 8-11 Years											
30	7-09	7-05	90	17	6-06	9	6-09	6	6-03	4	6-00
12	10-01	7-06	71	19	8-03	10	7-00	8	8-09	8	8-03
37	8-03	7-06	81	19	8-03	14	9-00	7	7-00	5	6-06
28	9-05	7-06	74	20	8-03	14	9-00	7	7-00	7	8-03
14	9-10	7-08	73	19	8-03	8	6-03	5	5-06	7	8-03
9	11-00	7-10	69	16	6-00	14	9-00	7	7-00	7	8-03
10	10-00	7-10	73	20	8-03	12	8-03	7	7-00	7	8-03
25	10-02	7-10	72	16	6-00	4	4-06	7	7-00	6	7-06
35	9-04	7-10	77	20	8-03	15	9-00	8	8-09	8	8-03
15	11-01	8-00	70	19	8-03	16	9-00	7	7-00	8	8-03
43	8-05	8-02	90	20	8-03	15	9-00	7	7-00	6	7-06
3	9-03	8-04	85	20	8-03	(14)	9-00	8	8-09	6	7-06
4	10-04	8-04	78	20	8-03	13	9-00	7	7-00	6	7-06
26	7-11	8-04	98	20	8-03	10	7-00	8	8-09	4	6-00
38	10-04	8-04	75	19	8-03	8	6-03	8	8-09	5	6-06
1	11-03	8-10	77	20	8-03	13	9-00	8	8-09	8	8-09
18	9-10	8-10	85	20	8-03	14	9-00	7	7-00	7	8-03
22	9-04	8-10	88	20	8-03	13	9-00	6	6-03	7	8-03
24	9-02	8-10	87	20	8-03	14	9-00	8	8-09	7	8-03
46	9-03	8-10	90	17	6-06	10	7-00	7	7-00	6	7-06

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TABLE 22 (continued)

Subject	CA	MA	IQ	Raw Scores and Perceptual Age Equivalents							
				Figure-Ground Discrimination		Form Constancy		Position in Space		Spatial Relationships	
				RS	PA	RS	PA	RS	PS	RS	PA
Mental Age Range: 9-00 to 10-11 Years											
17	11-03	9-00	77	19	8-03	7	6-00	6	6-03	6	7-06
40	11-04	9-00	78	19	8-03	14	9-00	8	8-09	7	8-03
2	11-03	9-02	80	15	5-09	4	4-06	7	7-00	7	8-03
42	9-04	9-06	96	20	8-03	10	7-00	7	7-00	6	7-06
6	10-11	9-08	84	19	8-03	8	6-03	7	7-00	7	8-03
45	9-05	9-08	96	19	8-03	13	9-00	8	8-09	7	8-03
7	10-00	9-10	91	20	8-03	12	8-03	7	7-00	7	8-03
Mental Age Range: 11-00 to 11-11 Years											
16	11-04	11-08	96	20	8-03	16	9-00	6	6-03	7	8-03

TABLE 23

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND RAW SCORES OF THE BENDER VISUAL MOTOR GESTALT TEST: SECOND EVALUATION, 1969-1970

Sub-ject	CA	MA	IQ	Raw Scores					
				Satisfactory Gestalts-Memory	Simplified Gestalts-Memory	Fragmented Gestalts-Memory	Satisfactory Gestalts-Perception	Simplified Gestalts-Perception	Fragmented Gestalts-Perception
Mental Age Range: 5-00 to 6-11 Years									
32	7-07	5-04	62	0	6	3	0	6	3
21	8-04	5-06	60	0	9	0	1	8	0
48	8-11	5-08	59	0	6	3	0	6	3
44	8-08	6-02	66	0	7	2	0	6	3
39	7-04	6-07	83	1	6	2	2	7	0
47	7-00	8-08	89	5	4	0	6	3	0
20	8-01	6-09	76	2	7	0	2	7	0
Mental Age Range: 7-00 to 8-11 Years									
19	7-10	7-00	80	2	7	0	5	4	0
5	11-01	7-02	64	0	6	3	1	5	3
11	9-05	7-02	70	1	7	1	3	1	1
27	7-10	7-02	85	1	6	2	0	5	4
8	10-04	7-04	68	2	5	2	3	4	2
23	9-06	7-04	72	3	6	0	3	6	0
41	8-07	7-04	79	1	4	4	2	6	1
30	7-09	7-05	90	1	6	2	0	6	3
12	10-01	7-06	71	0	8	1	2	7	0

(continued on next page)

TABLE 23 (continued)

Sub-ject	CA	MA	IQ	Raw Scores					
				Satisfactory Gestalts-Memory	Simplified Gestalts-Memory	Fragmented Gestalts-Memory	Satisfactory Gestalts-Perception	Simplified Gestalts-Perception	Fragmented Gestalts-Perception
Mental Age Range: 7-00 to 8-11 Years									
37	8-03	7-06	81	4	5	0	3	6	0
28	9-05	7-06	74	5	3	1	4	5	0
14	9-10	7-08	73	1	6	2	1	6	2
9	11-00	7-10	69	1	7	1	4	5	0
10	10-00	7-10	73	1	8	0	2	7	0
25	10-02	7-10	72	0	7	2	1	8	0
35	9-04	7-10	77	7	2	0	5	4	0
15	11-01	8-00	70	2	7	0	2	7	0
43	8-05	8-02	90	2	7	0	3	6	0
3	9-03	8-04	85	1	8	0	4	5	0
4	10-04	8-04	78	3	6	0	2	6	1
26	7-11	8-04	98	2	6	1	1	8	0
38	10-04	8-04	75	0	7	2	1	7	1
1	11-03	8-10	77	4	5	0	3	6	0
18	9-10	8-10	85	6	3	0	3	6	0
22	9-04	8-10	88	4	5	0	4	5	0
24	9-02	8-10	87	2	7	0	1	7	1
46	9-03	8-10	90	1	8	0	2	7	0

(continued on next page)

TABLE 23 (continued)

Subject	CA	MA	IQ	Raw Scores					
				Satisfactory Gestalts-Memory	Simplified Gestalts-Memory	Fragmented Gestalts-Memory	Satisfactory Gestalts-Perception	Simplified Gestalts-Perception	Fragmented Gestalts-Perception
Mental Age Range: 9-00 to 10-11 Years									
17	11-03	9-00	77	2	7	0	2	7	0
40	11-04	9-00	78	1	8	0	3	6	0
2	11-03	9-02	80	2	7	0	3	6	0
42	9-04	9-06	96	2	6	1	2	6	1
6	10-11	9-08	84	4	5	0	3	6	0
45	9-05	9-08	96	6	3	0	6	3	0
7	10-00	9-10	91	4	4	1	4	5	0
Mental Age Range: 11-00 to 11-11 Years									
16	11-04	11-08	96	2	7	0	1	8	0

TABLE 24

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND DERIVED SCORES OF THE MURPHY-DURRELL READING READINESS ANALYSIS: SECOND EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores				
				Capital Letters	Lower-case Letters	Initial Phonemes	Final Phonemes	Total Phonemes
Mental Age Range: 5-00 to 6-11 Years								
32	7-07	5-04	62	12	5	27	1	28
21	8-04	5-06	60	26	24	24	4	28
48	8-11	5-08	59	26	26	37	9	46
44	8-08	6-02	66	17	16	30	6	36
39	7-04	6-07	83	26	24	35	9	44
47	7-00	8-08	89	25	25	38	9	47
20	8-01	6-09	76	26	23	35	8	43
Mental Age Range: 7-00 to 8-11 Years								
19	7-10	7-00	80	26	25	37	9	46
5	11-01	7-02	64	25	24	32	3	35
11	9-05	7-02	70	26	26	38	10	48
27	7-10	7-02	85	26	26	38	9	47
8	10-04	7-04	68	26	23	38	10	48
23	9-06	7-04	72	25	26	38	5	43
41	8-07	7-04	79	26	24	35	9	44
30	7-09	7-05	90	26	24	38	9	47

(continued on next page)

TABLE 24 (continued)

Subject	CA	MA	IQ	Raw Scores				
				Capital Letters	Lower-case Letters	Initial Phonemes	Final Phonemes	Total Phonemes
Mental Age Range: 7-00 to 8-11 Years								
12	10-01	7-06	71	24	24	38	8	46
37	8-03	7-06	81	26	23	38	10	48
28	9-05	7-06	74	26	26	37	9	46
14	9-10	7-08	73	26	26	38	10	48
9	11-00	7-10	69	16	16	37	8	45
10	10-00	7-10	73	26	26	38	10	48
25	10-02	7-10	72	26	26	32	7	39
35	9-04	7-10	77	26	26	38	10	48
15	11-01	8-00	70	26	26	38	10	48
43	8-05	8-02	90	26	26	38	10	48
3	9-03	8-04	85	26	26	38	10	48
4	10-04	8-04	78	26	26	36	10	46
26	7-11	8-04	98	26	26	38	10	48
38	10-04	8-04	75	26	26	37	9	46
1	11-03	8-10	77	26	26	38	10	48
18	9-10	8-10	85	26	26	38	10	48
22	9-04	8-10	88	26	24	38	9	47
24	9-02	8-10	87	26	26	37	9	46
46	9-03	8-10	90	26	26	38	10	48

(continued on next page)

TABLE 24 (continued)

Subject	CA	MA	IQ	Raw Scores				
				Capital Letters	Lower-case Letters	Initial Phonemes	Final Phonemes	Total Phonemes
Mental Age Range: 9-00 to 10-11 Years								
17	11-03	9-00	77	26	26	38	10	48
40	11-04	9-00	78	26	25	38	10	48
2	11-03	9-02	80	25	26	37	10	47
42	9-04	9-06	96	26	26	38	10	48
6	10-11	9-08	84	25	26	36	7	43
45	9-05	9-08	96	26	26	38	10	48
7	10-00	9-10	91	26	26	38	10	48
Mental Age Range: 11-00 to 11-11 Years								
16	11-04	11-08	96	26	26	38	10	48

TABLE 25

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND DERIVED SCORES OF THE DURRELL ANALYSIS OF READING DIFFICULTY: SECOND EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores							
								Intermediate Visual Memory			
				Capital Letters	Lower-case Letters	Blends	Primary Visual Memory	Total Letters	Letters in Sequence	Intrusion	Primary Hearing Sounds
Mental Age Range: 5-00 to 6-11 Years											
32	7-07	5-04	62	0	0	DNA	5	DNA	DNA	DNA	DNA
21	8-04	5-06	60	24	22	0	5	28	24	24	5
48	8-11	5-08	59	26	24	0	16	39	38	1	20
44	8-08	6-02	66	11	8	0	5	DNA	DNA	DNA	DNA
39	7-04	6-07	83	26	22	0	4	DNA	DNA	DNA	17
47	7-00	6-08	89	26	23	0	11	38	36	3	12
20	8-01	6-09	76	26	23	4	10	48	42	23	18
Mental Age Range: 7-00 to 8-11 Years											
19	7-10	7-00	80	25	24	0	6	21	21	2	22
5	11-01	7-02	64	22	24	2	11	35	33	16	15
11	9-05	7-02	70	26	25	9	14	67	58	40	18
27	7-10	7-02	85	26	26	15	13	27	25	5	27
8	10-04	7-04	68	26	26	13	16	50	45	7	23
23	9-06	7-04	72	26	26	13	14	51	47	13	24

(continued on next page)

TABLE 25 (continued)

Sub-ject	CA	MA	IQ	Raw Scores							
				Capital Letters	Lower-case Letters	Blends	Primary Visual Memory	Intermediate Visual Memory			Primary Hearing Sounds
								Total Letters	Letters in Se-quence	Intru-sion	
Mental Age Range: 7-00 to 8-11 Years											
41	8-07	7-04	79	26	23	10	12	32	29	9	23
30	7-09	7-05	90	26	26	15	15	71	64	40	23
12	10-01	7-06	71	25	25	7	17	38	38	1	21
37	8-03	7-06	81	26	26	16	14	49	48	3	27
28	9-05	7-06	74	26	26	13	14	38	37	0	25
14	9-10	7-08	73	26	26	15	19	113	113	3	25
9	11-00	7-10	69	10	10	0	12	38	33	8	18
10	10-00	7-10	73	26	26	15	14	71	61	11	24
25	10-02	7-10	72	26	26	13	14	43	37	12	23
35	9-04	7-10	77	26	26	16	17	88	84	7	29
15	11-01	8-00	70	26	26	16	19	106	105	7	29
43	8-05	8-02	90	26	25	13	14	59	58	1	27
3	9-03	8-04	85	26	26	16	16	DNA	DNA	DNA	13
4	10-04	8-04	78	26	26	16	17	72	66	18	29
26	7-11	8-04	98	26	26	16	18	65	56	5	26
38	10-04	8-04	75	26	26	15	12	62	60	5	27
1	11-03	8-10	77	26	26	13	19	104	102	4	26
18	9-10	8-10	85	26	26	16	14	80	76	20	29
22	9-04	8-10	88	26	26	16	14	91	87	16	25

(continued on next page)

TABLE 25 (continued)

Subject	CA	MA	IQ	Raw Scores							
								Intermediate Visual Memory			
				Capital Letters	Lower-case Letters	Blends	Primary Visual Memory	Total Letters	Letters in Sequence	Intrusion	Primary Hearing Sounds
Mental Age Range: 7-00 to 8-11 Years											
24	9-02	8-10	87	26	26	16	17	83	77	36	29
46	9-03	8-10	90	26	24	13	13	59	53	23	28
Mental Age Range: 9-00 to 10-11 Years											
17	11-03	9-00	77	26	26	15	18	106	103	9	28
40	11-04	9-00	78	26	26	7	14	46	46	2	28
2	11-03	9-02	80	26	26	16	17	99	95	13	27
42	9-04	9-06	96	26	26	15	15	78	70	11	27
6	10-11	9-08	84	26	26	13	12	65	60	8	24
45	9-05	9-08	96	26	26	15	16	101	96	12	29
7	10-00	9-10	91	26	26	7	16	67	60	27	27
Mental Age Range: 11-00 to 11-11 Years											
16	11-04	11-08	96	26	26	16	14	78	73	15	29

TABLE 26

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND DERIVED SCORES OF THE DURRELL ANALYSIS OF READING DIFFICULTY: SECOND EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores							
				Intermediate Hearing Sounds				Word Recognition	Oral Reading Recall	Silent Reading Recall	Listening Comprehension Recall
				Total Consonants	Total Vowels	Sounds in Sequence	Intrusion				
Mental Age Range: 5-00 to 6-11 Years											
32	7-07	5-04	62	DNA	DNA	DNA	DNA	DNA	DNA	DNA	19
21	8-04	5-06	60	DNA	DNA	DNA	DNA	2	DNA	DNA	19
48	8-11	5-08	59	15	12	26	11	60	17	10	15
44	8-08	6-02	66	DNA	DNA	DNA	DNA	0	0	DNA	11
39	7-04	6-07	83	DNA	DNA	DNA	DNA	0	4	DNA	21
47	7-00	8-08	89	27	4	28	22	4	3	DNA	22
20	8-01	6-09	76	61	3	63	5	6	3	DNA	24
Mental Age Range: 7-00 to 8-11 Years											
19	7-10	7-00	80	23	4	26	6	6	4	DNA	23
5	11-01	7-02	64	17	15	29	28	5	7	3	22
11	9-05	7-02	70	31	20	43	44	10	4	DNA	19
27	7-10	7-02	85	64	23	84	17	9	4	DNA	25
8	10-04	7-04	68	60	23	79	13	29	20	16	9
23	9-06	7-04	72	59	11	66	10	7	3	DNA	12
41	8-07	7-04	79	57	23	79	15	39	9	14	23

(continued on next page)

TABLE 26 (continued)

Sub-ject	CA	MA	IQ	Raw Scores							
				Intermediate Hearing Sounds				Word Recog-nition	Oral Reading Recall	Silent Reading Recall	Listening Compre-hension Recall
				Total Conso-nants	Total Vowels	Sounds in Se-quence	Intrusion				
				Mental Age Range: 7-00 to 8-11 Years							
30	7-09	7-05	90	51	26	74	14	50	26	74	24
12	10-01	7-06	71	17	7	24	2	16	8	5	4
37	8-03	7-06	81	71	29	100	9	37	23	72	24
28	9-05	7-06	74	60	25	83	16	40	16	28	22
14	9-10	7-08	73	71	34	105	20	83	1	7	15
9	11-00	7-10	69	DNA	DNA	DNA	DNA	4	3	DNA	4
10	10-00	7-10	73	55	25	74	32	52	23	17	23
25	10-02	7-10	72	65	20	84	5	25	6	0	16
35	9-04	7-10	77	73	32	104	8	48	20	62	15
15	11-01	8-00	70	69	33	100	8	85	28	6	16
43	8-05	8-02	90	24	6	29	6	45	24	10	21
3	9-03	8-04	85	DNA	DNA	DNA	DNA	12	8	14	22
4	10-04	8-04	78	70	32	100	11	73	30	72	32
26	7-11	8-04	98	65	19	82	24	39	20	27	25
38	10-04	8-04	75	73	27	99	13	29	22	97	25
1	11-03	8-10	77	71	31	102	11	74	24	84	24
18	9-10	8-10	85	63	24	86	17	39	19	55	24
22	9-04	8-10	88	56	22	71	39	34	13	22	25
24	9-02	8-10	87	61	22	75	26	39	23	15	23
46	9-03	8-10	90	65	31	95	19	25	22	63	19

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TABLE 26 (continued)

Subject	CA	MA	IQ	Raw Scores							
				Intermediate Hearing Sounds				Word Recognition	Oral Reading Recall	Silent Reading Recall	Listening Comprehension Recall
				Total Consonants	Total Vowels	Sounds in Sequence	Intrusion				
Mental Age Range: 9-00 to 10-11 Years											
17	11-03	9-00	77	60	26	80	19	77	33	65	24
40	11-04	9-00	78	DNA	DNA	DNA	DNA	24	19	27	22
2	11-03	9-02	80	72	34	105	6	76	24	20	23
42	9-04	9-06	96	60	26	77	21	66	31	91	34
6	10-11	9-08	84	21	14	31	17	40	23	31	24
45	9-05	9-08	96	66	29	93	29	65	18	66	17
7	10-00	9-10	91	38	19	52	27	12	10	16	24
Mental Age Range: 11-00 to 11-11 Years											
16	11-04	11-08	96	58	24	79	26	61	35	116	37

TABLE 27

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND TOTAL SCORES OF THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES: THIRD EVALUATION, 1969-1970

Subject	CA[a]	MA[b]	IQ	Raw Scores and Language Ages									
				Auditory Decoding		Visual Decoding		Auditory-Vocal Association		Visual-Motor Association		Vocal Encoding	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 5-00 to 6-11 Years													
32	9-05	5-10	61	32	8-10+	17	8-09	15	5-06	19	7-06	10	4-05
21	10-02	6-04	62	17	5-00	15	7-03	15	5-06	17	6-10	13	5-04
Mental Age Range: 7-00 to 8-11 Years													
44	10-05	7-00	67	31	8-10+	17	8-09	19	6-10	20	7-10	20	7-09
48	10-08	7-02	68	25	7-01	15	7-03	20	7-03	20	7-10	13	5-04
39	9-01	7-04	79	27	7-11	16	7-10	21	7-08	19	7-06	24	8-11+
8	12-01	7-06	65	30	8-10+	21	8-09+	21	7-08	25	9-03+	20	7-09
9	12-09	7-06	62	31	8-10+	16	7-10	18	6-06	17	6-10	18	6-11
14	11-08	7-08	68	26	7-06	17	8-09	17	6-01	20	7-10	14	5-08
5	12-10	7-10	65	29	8-10+	19	9-09+	19	6-10	22	8-07	25	8-11+
20	9-09	7-10	79	27	7-11	18	8-09+	21	7-08	22	8-07	24	8-11+
23	11-03	8-00	72	31	8-10+	17	8-09	19	6-10	22	8-07	19	7-04
25	11-10	8-00	70	32	8-10+	15	7-03	18	6-06	16	6-06	21	8-11
11	11-02	8-02	74	32	8-10+	20	8-09+	22	8-03	17	6-10	23	8-11+
12	11-10	8-04	72	29	8-10+	22	8-09+	21	7-08	24	9-03	25	8-11+

(continued on next page)

TABLE 27 (continued)

Subject	CA[a]	MA[b]	IQ	Raw Scores and Language Ages									
				Auditory Decoding		Visual Decoding		Auditory-Vocal Association		Visual-Motor Association		Vocal Encoding	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 7-00 to 8-11 Years													
27	9-06	8-04	86	31	8-10+	17	8-09	19	6-10	22	8-07	13	5-04
30	9-04	8-06	88	28	8-10	20	8-09+	19	6-10	19	7-06	18	6-11
35	11-00	8-06	77	26	7-06	18	8-09+	23	9-00	23	8-11	23	8-11+
47	8-09	8-06	95	22	6-02	19	8-09+	20	7-03	22	8-07	22	8-11+
2	12-11	8-08	70	30	8-10+	18	8-09+	21	7-08	20	7-10	24	8-11+
19	9-07	8-08	88	30	8-10+	20	8-09+	21	7-08	21	8-03	32	8-11+
24	10-09	8-08	80	34	8-10+	18	8-09+	25	9-00	21	8-03	26	8-11+
28	11-01	8-08	78	34	8-10+	20	8-09+	20	7-03	21	8-03	25	8-11+
41	10-04	8-10	84	31	8-10+	20	8-09+	21	7-08	22	8-07	21	8-11
Mental Age Range: 9-00 to 10-11 Years													
4	12-01	9-00	76	33	8-10+	19	8-09+	23	9-00	22	8-07	28	8-11+
38	12-00	9-00	77	33	8-10+	20	8-09+	23	9-00	22	8-07	23	8-11+
3	11-00	9-02	83	29	8-10+	21	8-09+	23	9-00	23	8-11	21	8-11
10	11-09	9-02	79	34	8-10+	19	8-09+	21	7-08	24	9-03	22	8-11+
37	10-00	9-04	91	27	7-11	19	8-09+	22	8-03	26	9-03+	26	8-11+
40	13-01	9-06	75	25	7-01	23	8-09+	24	9-00+	24	9-03	25	8-11+
43	10-01	9-06	92	28	8-10	20	8-09+	22	8-03	22	8-07	20	7-09
7	11-08	10-00	86	35	8-10+	21	8-09+	20	7-03	24	9-03	27	8-11+
15	12-10	10-00	79	27	7-11	21	8-09+	21	7-08	25	9-03+	22	8-11+

(continued on next page)

TABLE 27 (continued)

Subject	CA[a]	MA[b]	IQ	Raw Scores and Language Ages									
				Auditory Decoding		Visual Decoding		Auditory-Vocal Association		Visual-Motor Association		Vocal Encoding	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 9-00 to 10-11 Years													
26	9-07	10-00	101	31	8-10+	18	8-09+	24	9-00+	24	9-03	37	8-11+
22	11-00	10-00	90	33	8-10+	20	8-09+	24	9-00+	25	9-03+	26	8-11+
1	12-11	10-02	80	33	8-10+	22	8-09+	23	9-00	23	8-11	31	8-11+
18	11-06	10-02	88	33	8-10+	19	8-09+	24	9-00+	23	8-11	29	8-11+
17	13-00	10-08	83	35	8-10+	20	8-09+	23	9-00	26	9-03+	26	8-11+
45	11-01	10-08	95	29	8-10+	20	8-09+	21	7-08	22	8-07	23	8-11+
6	12-08	10-10	86	33	8-10+	20	8-09+	23	9-00	20	7-10	30	8-11+
42	11-01	10-10	96	34	8-10+	20	8-09+	21	7-08	25	9-03+	23	8-11+
46	11-00	10-10	97	31	8-10+	21	8-09+	22	8-03	23	8-11	25	8-11+
Mental Age Range: 11-00 to 12-11 Years													
16	13-00	12-02	93	34	8-10+	21	8-09+	25	9-00+	26	9-03+	30	8-11+

[a] CA represents chronological age of child at point of third evaluation in June 1970.

[b] MA represents mental age of child at point of third evaluation in June 1970.

TABLE 28

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND TOTAL SCORES OF THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES: THIRD EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Motor Encoding		Auditory-Vocal Automatic		Auditory-Vocal Sequential		Visual-Motor Sequential		Total ITPA	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 5-00 to 6-11 Years													
32	9-05	5-10	61	22	8-08+	13	6-06	13	3-11	12	5-04	153	6-05
21	10-02	6-04	62	12	5-00	18	8-04	7	2-11	13	5-08	127	5-06
Mental Age Range: 7-00 to 8-11 Years													
44	10-05	7-00	67	19	8-08	16	7-07	11	3-07	14	6-00	167	7-00
48	10-08	7-02	68	17	7-04	15	7-03	16	4-07	13	5-08	154	6-05
39	9-01	7-04	79	24	8-08+	12	6-01	17	4-10	12	5-04	172	7-03
8	12-01	7-06	65	20	8-08+	19	8-09	19	5-04	17	7-04	192	8-06
9	12-09	7-06	62	13	5-05	10	5-04	29	8-06+	16	6-09	168	7-01
14	11-08	7-08	68	16	6-10	17	8-00	29	8-06+	14	6-00	170	7-02
5	12-10	7-10	65	16	6-10	20	9-01	26	7-10	14	6-00	190	8-04
20	9-09	7-10	79	21	8-08+	11	5-09	19	5-04	16	6-09	179	7-07
23	11-03	8-00	72	19	8-08	12	6-01	25	7-04	15	6-04	179	7-07
25	11-10	8-00	70	17	7-04	16	7-07	27	8-06	10	4-10	172	7-03
11	11-02	8-02	74	20	8-08+	16	7-07	22	6-03	12	5-04	184	7-11
12	11-10	8-04	72	18	7-11	18	8-04	21	5-11	15	6-04	193	8-07
27	9-06	8-04	86	16	6-10	22	9-06+	18	5-01	15	6-04	173	7-04

(continued on next page)

TABLE 28 (continued)

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Motor Encoding		Auditory-Vocal Automatic		Auditory-Vocal Sequential		Visual Motor Sequential		Total ITPA	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 7-00 to 8-11 Years													
30	9-04	8-06	88	23	8-08+	18	8-04	20	5-07	10	4-10	175	7-05
35	11-00	8-06	77	16	6-10	15	7-03	18	5-01	18	7-10	180	7-08
47	8-09	8-06	95	16	6-10	19	8-09	17	4-10	21	9-00+	178	7-07
2	12-11	8-08	70	13	5-05	19	8-09	24	7-00	19	8-05	188	8-02
19	9-07	8-08	88	20	8-08+	17	8-00	29	8-06+	19	8-05	209	9-04+
24	10-09	8-08	80	21	8-08+	20	9-01	19	5-04	14	6-00	198	9-01
28	11-01	8-08	78	21	8-08+	16	7-07	18	5-01	14	6-00	189	8-03
41	10-04	8-10	84	24	8-08+	18	8-04	22	6-03	13	5-08	192	8-06
Mental Age Range: 9-00 to 10-11 Years													
4	12-01	9-00	76	21	8-08+	21	9-06	27	8-06	16	6-09	200	9-04+
38	12-00	9-00	77	18	7-11	19	8-09	31	8-06+	13	5-08	202	9-04+
3	11-00	9-02	83	23	8-08+	21	9-06	22	6-03	22	9-00+	205	9-04+
10	11-09	9-02	79	22	8-08+	17	8-00	19	5-04	16	6-09	194	8-08
37	10-00	9-04	91	23	8-08+	21	9-06	26	7-10	24	9-00+	214	9-04+
40	13-01	9-06	75	21	8-08+	18	8-04	27	8-06	20	9-00	207	9-04+
43	10-01	9-06	92	20	8-08+	17	8-00	22	6-03	24	9-00+	195	8-09

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TABLE 28 (continued)

Subject	CA	MA	IQ	Raw Scores and Language Ages									
				Motor Encoding		Auditory-Vocal Automatic		Auditory-Vocal Sequential		Visual Motor Sequential		Total ITPA	
				RS	LA	RS	LA	RS	LA	RS	LA	RS	LA
Mental Age Range: 9-00 to 10-11 Years													
7	11-08	10-00	86	21	8-08+	19	8-09	23	6-07	23	9-00+	213	9-04+
15	12-10	10-00	79	21	8-08+	17	8-00	20	5-07	15	6-04	189	8-03
26	9-07	10-00	101	21	8-08+	23	9-06+	32	8-06+	24	9-00+	234	9-04+
22	11-00	10-00	90	20	8-08+	16	7-07	20	5-07	21	9-00+	205	9-04+
1	12-11	10-02	80	18	7-11	20	9-01	27	8-06	20	9-00	217	9-04+
18	11-06	10-02	88	20	8-08+	16	7-07	20	5-07	23	9-00+	207	9-04+
17	13-00	10-08	83	17	7-04	19	8-09	35	8-06+	19	8-05	220	9-04+
45	11-01	10-08	95	23	8-08+	18	8-04	27	8-06	22	9-00+	205	9-04+
6	12-08	10-10	86	23	8-08+	20	9-01	16	4-07	15	6-04	200	9-04+
42	11-01	10-10	96	21	8-08+	20	9-01	21	5-11	17	7-04	202	9-04+
46	11-00	10-10	97	17	7-04	17	8-00	23	6-07	24	9-00+	203	9-04+
Mental Age Range: 11-00 to 12-11 Years													
16	13-00	12-02	93	21	8-08+	21	9-06	29	8-06+	27	9-00+	234	9-04+

TABLE 29

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST SCORES ON THE DETROIT TESTS OF LEARNING APTITUDE: THIRD EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores and Mental Ages									
				Auditory Attention Span				Visual Attention Span				Disarranged Pictures	
				Unrelated Words		Related Words		Objects		Letters			
				RS	MA	RS	MA	RS	MA	RS	MA	RS	MA
Mental Age Range: 5-00 to 6-11 Years													
32	9-05	5-10	61	26	-3-00	19	3-06	33	6-03	0	-5-09	16	9-00
21	10-02	6-04	62	29	3-06	4	-3-00	30	5-03	3-3	7-00	7	6-09
Mental Age Range: 7-00 to 8-11 Years													
44	10-05	7-00	67	44	8-00	44	6-00	42	9-00	4-1	7-06	10	7-06
48	10-08	7-02	68	37	5-09	42	5-06	43	9-03	5-1	9-00	10	7-06
39	9-01	7-04	79	46	8-06	42	5-06	34	6-09	3-2	6-09	11	7-09
8	12-01	7-06	65	46	8-06	43	5-09	47	10-09	5-2	9-06	13	8-03
9	12-09	7-06	62	41	7-00	75	11-00	42	9-00	4-2	7-09	0	-5-06
14	11-08	7-08	68	44	8-00	48	6-06	30	5-03	7-2	13-09	0	-5-06
5	12-10	7-10	65	39	6-03	46	6-03	43	9-03	5-1	9-00	4	6-00
20	9-09	7-10	79	29	3-06	44	6-00	31	5-09	3-2	6-09	4	6-00
23	11-03	8-00	72	47	8-09	40	5-03	54	13-03	5-1	9-00	13	8-03
25	11-10	8-00	70	44	8-00	53	7-06	39	8-00	4-3	8-03	20	10-00
11	11-02	8-02	74	44	8-00	33	4-06	43	9-03	6-1	11-00	13	8-03
12	11-10	8-04	72	33	4-06	28	4-03	43	9-03	4-2	7-09	30	12-06

(continued on next page)

TABLE 29 (continued)

Sub-ject	CA	MA	IQ	Raw Scores and Mental Ages									
				Auditory Attention Span				Visual Attention Span				Disarranged Pictures	
				Unrelated Words		Related Words		Objects		Letters			
				RS	MA	RS	MA	RS	MA	RS	MA	RS	MA
Mental Age Range: 7-00 to 8-11 Years													
27	9-06	8-04	86	42	7-06	40	5-03	39	8-00	6-1	11-00	8	7-00
30	9-04	8-06	88	42	7-06	47	6-06	46	10-03	6-1	11-00	17	9-03
35	11-00	8-06	77	37	5-09	37	5-00	54	13-03	5-1	9-00	24	11-00
47	8-09	8-06	95	41	7-00	28	4-03	48	11-00	4-3	8-03	20	10-00
2	12-11	8-08	70	43	7-09	55	7-09	47	10-09	5-1	9-00	22	10-06
19	9-07	8-08	88	56	12-09	58	8-03	53	13-00	4-2	7-09	22	10-06
24	10-09	8-08	80	37	5-09	42	5-06	45	10-00	5-1	9-00	21	10-03
28	11-01	8-08	78	40	6-06	44	6-00	53	13-00	5-1	9-00	33	13-03
41	10-04	8-10	84	40	6-06	50	7-00	43	9-03	5-1	9-00	30	12-06
Mental Age Range: 9-00 to 10-11 Years													
4	12-01	9-00	76	44	8-00	55	7-09	52	12-06	6-1	11-00	19	9-09
38	12-00	9-00	77	47	8-09	57	8-00	48	11-00	5-1	9-00	27	11-09
3	11-00	9-02	83	44	8-00	53	7-06	48	11-00	5-3	10-00	19	9-09
10	11-09	9-02	79	41	7-00	42	5-06	52	12-06	4-3	8-03	22	10-06
37	10-00	9-04	91	47	8-09	53	7-06	51	12-00	5-1	9-00	29	12-03
40	13-01	9-06	75	51	10-06	54	7-06	54	13-03	6-1	11-00	36	14-00
43	10-01	9-06	92	44	8-00	35	4-09	55	13-09	5-3	10-00	7	6-09

(continued on next page)

TABLE 29 (continued)

Subject	CA	MA	IQ	Raw Scores and Mental Ages									
				Auditory Attention Span				Visual Attention Span				Disarranged Pictures	
				Unrelated Words		Related Words		Objects		Letters			
				RS	MA	RS	MA	RS	MA	RS	MA	RS	MA
Mental Age Range: 9-00 to 10-11 Years													
7	11-08	10-00	86	44	8-00	54	7-06	54	13-03	4-3	8-03	24	11-00
15	12-10	10-00	79	37	5-09	42	5-06	46	10-03	6-1	11-00	37	14-03
26	9-07	10-00	101	60	14-09	71	10-06	61	16-09	7-2	13-09	22	10-06
22	11-00	10-00	90	45	8-03	51	7-00	57	14-09	6-1	11-00	26	11-06
1	12-11	10-02	80	41	7-00	43	5-09	54	13-03	6-1	11-00	17	9-03
18	11-06	10-02	88	42	7-06	45	6-00	56	14-03	5-2	9-06	22	10-06
17	13-00	10-08	83	44	8-00	68	10-00	54	13-03	6-1	11-00	21	10-03
45	11-01	10-08	95	39	6-03	50	7-00	52	12-06	7-1	13-00	40	15-00
6	12-08	10-10	86	43	7-09	61	8-09	47	10-09	5-1	9-00	25	11-03
42	11-01	10-10	96	39	6-03	34	4-09	50	11-09	5-1	9-00	17	9-03
46	11-00	10-10	97	46	8-06	60	8-06	49	11-03	5-3	10-00	25	11-03
Mental Age Range: 11-00 to 12-11 Years													
16	13-00	12-02	93	39	6-03	46	6-03	57	14-09	5-1	9-00	33	13-03

TABLE 30

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST SCORES OF THE FROSTIG DEVELOPMENTAL TEST OF VISUAL PERCEPTION: THIRD EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores and Perceptual Age Equivalents							
				Figure-Ground Discrimination		Form Constancy		Position in Space		Spatial Relationships	
				RS	PA	RS	PA	RS	PA	RS	PA
Mental Age Range: 5-00 to 6-11 Years											
32	9-05	5-10	61	19	8-03	16	9-00	6	6-03	5	6-06
21	10-02	6-04	62	13	5-03	8	6-03	6	6-03	4	6-00
Mental Age Range: 6-00 to 8-11 Years											
44	10-05	7-00	67	18	7-00	13	9-00	5	5-06	4	6-00
48	10-08	7-02	68	16	6-00	11	7-06	7	7-00	6	7-06
39	9-01	7-04	79	4	3-09	12	8-03	6	6-03	4	6-00
8	12-01	7-06	65	20	8-03	17	9-00	7	7-00	6	7-06
9	12-09	7-06	62	19	8-03	14	9-00	6	6-03	8	8-03
14	11-08	7-08	68	19	8-03	12	8-03	7	7-00	6	7-06
5	12-10	7-10	65	16	6-00	11	7-06	7	7-00	4	6-00
20	9-09	7-10	79	19	8-03	15	9-00	8	8-09	6	7-06
23	11-03	8-00	72	20	8-03	12	8-03	8	8-09	7	8-03
25	11-10	8-00	70	19	8-03	16	9-00	7	7-00	6	7-06
11	11-02	8-02	74	20	8-03	15	9-00	8	8-09	7	8-03
12	11-10	8-04	72	19	8-03	15	9-00	8	8-09	8	8-03
27	9-06	8-04	86	19	8-03	16	9-00	8	8-09	6	7-06
30	9-04	8-06	88	18	7-00	10	7-00	6	6-03	5	6-06
35	11-00	8-06	77	20	8-03	17	9-00	8	8-09	8	8-03
47	8-09	8-06	95	20	8-03	14	9-00	8	8-09	8	8-03
2	12-11	8-08	70	18	7-00	10	7-00	8	8-09	7	8-03

(continued on next page)

TABLE 30 (continued)

Subject	CA	MA	IQ	Raw Scores and Perceptual Age Equivalents							
				Figure-Ground Discrimination		Form Constancy		Position in Space		Spatial Relationships	
				RS	PA	RS	PA	RS	PA	RS	PA
Mental Age Range: 7-00 to 8-11 Years											
19	9-07	8-08	88	20	8-03	16	9-00	8	8-09	7	8-03
24	10-09	8-08	80	20	8-03	16	9-00	8	8-09	7	8-03
28	11-01	8-08	78	20	8-03	13	9-00	8	8-09	8	8-03
41	10-04	8-10	84	20	8-03	14	9-00	7	7-00	7	8-03
Mental Age Range: 9-00 to 10-11 Years											
4	12-01	9-00	76	20	8-03	15	9-00	8	8-09	8	8-03
38	12-00	9-00	77	20	8-03	14	9-00	7	7-00	6	7-06
3	11-00	9-02	83	20	8-03	15	9-00	7	7-00	6	7-06
10	11-09	9-02	79	20	8-03	15	9-00	6	6-03	8	8-03
37	10-00	9-04	91	20	8-03	12	8-03	8	8-09	7	8-03
40	13-01	9-06	75	20	8-03	12	8-03	8	8-09	7	8-03
43	10-01	9-06	92	20	8-03	16	9-00	8	8-09	7	8-03
7	11-08	10-00	86	20	8-03	12	8-03	7	7-00	8	8-03
15	12-10	10-00	79	19	8-03	17	9-00	8	8-09	7	8-03
26	9-07	10-00	101	19	8-03	15	9-00	7	7-00	7	8-03
22	11-00	10-00	90	20	8-03	15	9-00	6	6-03	8	8-03
1	12-11	10-02	80	20	8-03	15	9-00	8	8-09	8	8-03
18	11-06	10-02	88	20	8-03	15	9-00	8	8-09	8	8-03
17	13-00	10-08	83	19	8-03	14	9-00	8	8-09	7	8-03

(continued on next page)

TABLE 30 (continued)

Subject	CA	MA	IQ	Raw Scores and Perceptual Age Equivalents							
				Figure-Ground Discrimination		Form Constancy		Position in Space		Spatial Relationships	
				RS	PA	RS	PA	RS	PA	RS	PA
Mental Age Range: 9-00 to 10-11 Years											
45	11-01	10-08	95	20	8-03	16	9-00	8	8-09	8	8-03
6	12-08	10-10	86	19	8-03	13	9-00	8	8-09	7	8-03
42	11-01	10-10	96	20	8-03	17	9-00	6	6-03	6	7-06
46	11-00	10-10	97	20	8-03	15	9-00	7	7-00	7	8-03
Mental Age Range: 11-00 to 12-11 Years											
16	13-00	12-02	93	20	8-03	15	9-00	8	8-09	8	8-03

TABLE 31

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND THREE DERIVED SCORES ON THE STANFORD-BINET: THIRD EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores		
				Conceptual-Language Functions	Visuo-Motor Functions	Auditory Memory Functions
Mental Age Range: 5-00 to 6-11 Years						
32	9-05	5-10	61	20	12	0
21	10-02	6-04	62	31	12	0
Mental Age Range: 7-00 to 8-11 Years						
44	10-05	7-00	67	68	12	0
48	10-08	7-02	68	54	12	8
39	9-01	7-04	79	58	18	8
8	12-01	7-06	65	52	12	8
9	12-09	7-06	62	54	18	14
14	11-08	7-08	68	58	18	0
5	12-10	7-10	65	66	12	14
20	9-09	7-10	79	66	16	6
23	11-03	8-00	72	66	28	6
25	11-10	8-00	70	66	18	18
11	11-02	8-02	74	66	30	18
12	11-10	8-04	72	80	40	10
27	9-06	8-04	86	80	12	22
30	9-04	8-06	88	90	18	14
35	11-00	8-06	77	80	54	0
47	8-09	8-06	95	86	42	8
2	12-11	8-08	70	100	28	10
19	9-07	8-08	88	76	30	26
24	10-09	8-08	80	102	40	0
28	11-01	8-08	78	74	50	18
41	10-04	8-10	84	108	30	8

(continued on next page)

TABLE 31 (continued)

Subject	CA	MA	IQ	Raw Scores Conceptual-Language Functions	Visuo-Motor Functions	Auditory Memory Functions
Mental Age Range: 9-00 to 10-11 Years						
7	11-08	10-00	86	144	54	20
15	12-10	10-00	79	166	82	14
26	9-07	10-00	101	144	30	52
22	11-00	10-00	90	134	68	14
1	12-11	10-02	80	176	46	42
18	11-06	10-02	88	146	70	8
17	13-00	10-08	83	188	58	40
45	11-01	10-08	95	161	70	24
6	12-08	10-10	86	198	102	14
42	11-01	10-10	96	254	38	24
46	11-00	10-10	97	208	60	48
Mental Age Range: 11-00 to 12-11 Years						
16	13-00	12-02	93	225	120	54

TABLE 32

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND RAW SCORES OF THE BENDER VISUAL MOTOR GESTALT TEST: THIRD EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores					
				Satisfactory Gestalts-Memory	Simplified Gestalts-Memory	Fragmented Gestalts Memory	Satisfactory Gestalts-Perception	Simplified Gestalts Perception	Fragmented Gestalts Perception
Mental Age Range: 5-00 to 6-11 Years									
32	9-05	5-10	61	1	7	1	0	8	1
21	10-02	6-04	62	0	8	1	0	9	0
Mental Age Range: 6-00 to 8-11 Years									
44	10-05	7-00	67	0	6	3	0	5	4
48	10-08	7-02	68	0	4	5	0	4	5
39	9-01	7-04	79	1	7	1	1	3	5
8	12-01	7-06	65	2	7	0	2	6	1
9	12-09	7-06	62	0	9	0	3	6	0
14	11-08	7-08	68	0	8	1	1	7	1
5	12-10	7-10	65	0	6	3	1	6	2
20	9-09	7-10	79	2	7	0	1	8	0
23	11-03	8-00	72	3	6	0	0	9	0
25	11-10	8-00	70	0	8	1	0	9	0
11	11-02	8-02	74	0	8	1	2	7	0
12	11-10	8-04	72	0	9	0	2	7	0
27	9-06	8-04	86	0	7	2	1	5	3
30	9-04	8-06	88	1	6	2	0	7	2

(continued on next page)

TABLE 32 (continued)

Subject	CA	MA	IQ	Raw Scores					
				Satisfactory Gestalts-Memory	Simplified Gestalts-Memory	Fragmented Gestalts-Memory	Satisfactory Gestalts-Perception	Simplified Gestalts-Perception	Fragmented Gestalts-Perception
Mental Age Range: 7-00 to 8-11 Years									
35	11-00	8-06	77	5	4	0	7	2	0
47	8-09	8-06	95	7	2	0	7	2	0
2	12-11	8-08	70	4	5	0	5	4	0
19	9-07	8-08	88	5	4	0	6	3	0
24	10-09	8-08	80	2	7	0	1	8	0
28	11-01	8-08	78	2	7	0	4	5	0
41	10-04	8-10	84	3	4	2	4	5	0
Mental Age Range: 9-00 to 10-11 Years									
4	12-01	9-00	76	4	5	0	6	3	0
38	12-00	9-00	77	1	7	1	2	7	0
3	11-00	9-02	83	1	7	1	2	7	0
10	11-09	9-02	79	3	6	0	3	6	0
37	10-00	9-04	91	2	7	0	3	6	0
40	13-01	9-06	75	3	6	0	7	2	0
43	10-01	9-06	92	4	5	0	5	4	0
7	11-08	10-00	86	5	4	0	4	5	0
15	12-10	10-00	79	2	7	0	2	7	0
26	9-07	10-00	101	3	6	0	3	6	0
22	11-00	10-00	90	2	6	1	1	7	1
1	12-11	10-02	80	6	3	0	8	1	0

(continued on next page)

TABLE 32 (continued)

Subject	CA	MA	IQ	Raw Scores: Satisfactory Gestalts-Memory	Raw Scores: Simplified Gestalts-Memory	Raw Scores: Fragmented Gestalts Memory	Raw Scores: Satisfactory Gestalts-Perception	Raw Scores: Simplified Gestalts-Perception	Raw Scores: Fragmented Gestalts-Perception
Mental Age Range: 9-00 to 10-11 Years									
18	11-06	10-02	88	3	6	0	6	3	0
17	13-00	10-08	83	0	9	0	2	7	0
45	11-01	10-08	95	6	3	0	8	1	0
6	12-08	10-10	86	3	6	0	4	5	0
42	11-01	10-10	96	3	5	1	2	6	1
46	11-00	10-10	97	1	8	0	4	5	0
Mental Age Range: 11-00 to 12-11 Years									
16	13-00	12-02	93	3	6	0	4	5	0

TABLE 33

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND DERIVED SCORES OF THE MURPHY-DURRELL READING READINESS ANALYSIS: THIRD EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores				
				Capital Letters	Lower-case Letters	Initial Phonemes	Final Phonemes	Total Phonemes
Mental Age Range: 5-00 to 6-11 Years								
32	9-05	5-10	61	21	16	14	0	14
21	10-02	6-04	62	26	22	34	8	42
Mental Age Range: 7-00 to 8-11 Years								
44	10-05	7-00	67	26	18	37	10	47
48	10-08	7-02	68	26	25	38	10	48
39	9-01	7-04	79	25	24	37	10	47
8	12-01	7-06	65	26	24	38	10	48
9	12-09	7-06	62	22	18	38	8	46
14	11-08	7-08	68	26	26	38	10	48
5	12-10	7-10	65	26	26	37	9	46
20	9-09	7-10	79	26	25	38	10	48
23	11-03	8-00	72	26	26	38	10	48
25	11-10	8-00	70	26	26	38	10	48
11	11-02	8-02	74	26	26	38	10	48
12	11-10	8-04	72	26	25	38	10	48
27	9-06	8-04	86	26	26	38	10	48
30	9-04	8-06	88	26	26	38	10	48
35	11-00	8-06	77	26	26	38	10	48

(continued on next page)

TABLE 33 (continued)

Subject	CA	MA	IQ	Raw Scores				
				Capital Letters	Lower-case Letters	Initial Phonemes	Final Phonemes	Total Phonemes
Mental Age Range: 7-00 to 8-11 Years								
47	8-09	8-06	95	26	25	37	10	47
2	12-11	8-08	70	26	25	37	10	47
19	9-07	8-08	88	26	25	38	10	48
24	10-09	8-08	80	26	26	38	10	48
28	11-01	8-08	78	26	26	38	10	48
41	10-04	8-10	84	26	26	38	10	48
Mental Age Range: 9-00 to 10-11 Years								
4	12-01	9-00	76	26	26	38	10	48
38	12-00	9-00	77	26	26	38	10	48
3	11-00	9-02	83	26	26	37	9	46
10	11-09	9-02	79	26	26	38	10	48
37	10-00	9-04	91	26	26	38	9	47
40	13-01	9-06	75	26	26	38	10	48
43	10-01	9-06	92	26	26	38	10	48
7	11-08	10-00	86	26	26	38	10	48
15	12-10	10-00	79	26	26	38	10	48
26	9-07	10-00	101	26	26	38	10	48
22	11-00	10-00	90	26	26	38	10	48
1	12-11	10-02	80	26	26	38	10	48
18	11-06	10-02	88	26	26	38	10	48
17	13-00	10-08	83	26	26	38	10	48

(continued on next page)

TABLE 33 (continued)

Subject	CA	MA	IQ	Raw Scores				
				Capital Letters	Lower-case Letters	Initial Phonemes	Final Phonemes	Total Phonemes
Mental Age Range: 9-00 to 10-11 Years								
45	11-01	10-08	95	26	26	38	10	48
6	12-08	10-10	86	26	25	38	10	48
42	11-01	10-10	96	26	26	38	10	48
46	11-00	10-10	97	26	26	38	10	48
Mental Age Range: 11-00 to 12-11 Years								
16	13-00	12-02	93	26	26	38	10	48

TABLE 34

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND DERIVED SCORES OF THE DURRELL ANALYSIS OF READING DIFFICULTY: THIRD EVALUATION, 1969-1970

				Raw Scores							
								Intermediate Visual Memory			
Sub-ject	CA	MA	IQ	Capital Letters	Lower-case Letters	Blends	Primary Visual Memory	Total Letters	Letters in Se-quence	Intru-sion	Primary Hearing Sounds
Mental Age Range: 5-00 to 6-11 Years											
32	9-05	5-10	61	0	0	DNA	DNA	DNA	DNA	DNA	DNA
21	10-02	6-04	62	25	24	0	9	48	39	29	14
Mental Age Range: 7-00 to 8-11 Years											
44	10-05	7-00	67	26	25	0	6	DNA	DNA	DNA	DNA
48	10-08	7-02	68	26	26	8	19	67	63	18	24
39	9-01	7-04	79	25	24	0	6	DNA	DNA	DNA	26
8	12-01	7-06	65	25	24	13	19	76	74	5	29
9	12-09	7-06	62	13	19	0	11	DNA	DNA	DNA	26
14	11-08	7-08	68	26	26	15	20	130	128	0	29
5	12-10	7-10	65	26	26	2	10	45	43	3	23
20	9-09	7-10	79	26	26	16	8	53	48	12	27
23	11-03	8-00	72	26	26	12	17	55	53	4	27
25	11-10	8-00	70	26	26	16	13	63	61	15	29
11	11-02	8-02	74	26	26	16	17	65	60	5	28
12	11-10	8-04	72	26	26	8	16	45	43	3	24

(continued on next page)

TABLE 34 (continued)

Sub-ject	CA	MA	IQ	Raw Scores							
				Capital Letters	Lower-case Letters	Blends	Primary Visual Memory	Intermediate Visual Memory			Primary Hearing Sounds
								Total Letters	Letters in Se-quence	Intru-sion	
Mental Age Range: 7-00 to 8-11 Years											
27	9-06	8-04	86	26	26	16	12	40	32	45	29
30	9-04	8-06	88	26	26	16	15	67	55	36	29
35	11-00	8-06	77	26	26	16	17	98	92	8	29
47	8-09	8-06	95	26	26	1	13	53	53	2	24
2	12-11	8-08	70	26	26	16	18	111	110	8	27
19	9-07	8-08	88	26	26	12	13	38	37	1	27
24	10-09	8-08	80	26	26	16	17	79	78	14	29
28	11-01	8-08	78	26	26	16	17	48	46	2	29
41	10-04	8-10	84	26	26	16	17	79	76	17	27
Mental Age Range: 9-00 to 10-11 Years											
4	12-01	9-00	76	26	26	16	18	89	84	15	29
38	12-00	9-00	77	26	26	16	14	74	69	15	27
3	11-00	9-02	83	26	26	15	17	54	51	6	28
10	11-09	9-02	79	26	26	15	15	69	65	2	28
37	10-00	9-04	91	26	26	16	16	101	99	5	29
40	13-01	9-06	75	26	26	14	17	64	62	6	27
43	10-01	9-06	92	26	26	16	17	91	83	7	29
7	11-08	10-00	86	26	26	16	17	97	91	40	28
15	12-10	10-00	79	26	26	16	20	129	129	4	29

(continued on next page)

TABLE 34 (continued)

Subject	CA	MA	IQ	Raw Scores							
				Capital Letters	Lower-case Letters	Blends	Primary Visual Memory	Intermediate Visual Memory			Primary Hearing Sounds
								Total Letters	Letters in Sequence	Intrusion	
Mental Age Range: 9-00 to 10-11 Years											
26	9-07	10-00	101	26	26	16	19	110	107	5	29
22	11-00	10-00	90	26	26	16	14	94	93	21	29
1	12-11	10-02	80	26	26	16	19	126	123	3	28
18	11-06	10-02	88	26	26	16	18	108	105	17	29
17	13-00	10-08	83	26	26	16	19	121	116	4	29
45	11-01	10-08	95	26	26	16	19	108	107	1	28
6	12-08	10-10	86	26	26	16	15	97	92	5	29
42	11-01	10-10	96	26	26	16	19	106	102	8	29
46	11-00	10-10	97	26	26	16	18	115	111	20	29
Mental Age Range: 11-00 to 12-11 Years											
16	13-00	12-02	93	26	26	16	19	107	101	6	29

TABLE 35

VARIABILITY IN PERFORMANCES OF INDIVIDUAL CHILDREN BASED ON IQ, CHRONOLOGICAL AGE, MENTAL AGE, AND SUBTEST AND DERIVED SCORES OF THE DURRELL ANALYSIS OF READING DIFFICULTY: THIRD EVALUATION, 1969-1970

Subject	CA	MA	IQ	Raw Scores							
				Intermediate Hearing Sounds				Word Recognition	Oral Reading Recall	Silent Reading Recall	Listening Comprehension Recall
				Total Consonants	Total Vowels	Sounds in Sequence	Intrusion				
Mental Age Range: 5-00 to 6-11 Years											
32	9-05	5-10	61	DNA	DNA	DNA	DNA	DNA	DNA	DNA	18
21	10-02	6-04	62	DNA	DNA	DNA	DNA	1	1	DNA	21
Mental Age Range: 7-00 to 8-11 Years											
44	10-05	7-00	67	DNA	DNA	DNA	DNA	0	0	DNA	20
48	10-08	7-02	68	58	28	77	27	60	27	71	22
39	9-01	7-04	79	DNA	DNA	DNA	DNA	1	4	DNA	24
8	12-01	7-06	65	70	31	100	15	39	27	65	22
9	12-09	7-06	62	DNA	DNA	DNA	DNA	4	3	DNA	3
14	11-08	7-08	68	72	37	109	7	79	4	6	5
5	12-10	7-10	65	45	23	55	47	8	8	0	23
20	9-09	7-10	79	66	17	75	10	8	6	DNA	19
23	11-03	8-00	72	50	17	61	8	8	9	DNA	21
25	11-10	8-00	70	69	27	93	9	38	6	4	22
11	11-02	8-02	74	59	17	74	2	18	9	12	24
12	11-10	8-04	72	64	25	89	16	15	8	7	15

(continued on next page)

TABLE 35 (continued)

Subject	CA	MA	IQ	Raw Scores							
				Intermediate Hearing Sounds				Word Recognition	Oral Reading Recall	Silent Reading Recall	Listening Comprehension Recall
				Total Consonants	Total Vowels	Sounds in Sequence	Intrusion				
Mental Age Range: 7-00 to 8-11 Years											
27	9-06	8-04	86	65	28	92	18	15	13	2	24
30	9-04	8-06	88	65	25	83	24	56	28	98	24
35	11-00	8-06	77	73	33	106	9	53	21	90	23
47	8-09	8-06	95	55	17	71	13	10	10	8	21
2	12-11	8-08	70	71	38	109	9	85	26	56	22
19	9-07	8-08	88	65	8	72	5	8	4	DNA	22
24	10-09	8-08	80	68	24	91	15	41	23	38	25
28	11-01	8-08	78	71	29	99	7	42	22	80	23
41	10-04	8-10	84	71	31	101	11	47	21	37	26
Mental Age Range: 9-00 to 10-11 Years											
4	12-01	9-00	76	73	36	107	6	80	31	97	31
38	12-00	9-00	77	70	26	93	13	39	22	86	19
3	11-00	9-02	83	31	10	41	9	40	19	5	22
10	11-09	9-02	79	74	39	111	6	72	22	27	20
37	10-00	9-04	91	75	36	111	5	53	24	89	22
40	13-01	9-06	75	58	30	86	17	37	22	81	21
43	10-01	9-06	92	66	32	96	15	47	27	74	22

(continued on next page)

TABLE 35 (continued)

Sub-ject	CA	MA	IQ	Raw Scores							
				Intermediate Hearing Sounds				Word Recog-nition	Oral Reading Recall	Silent Reading Recall	Listening Compre-hension Recall
				Total Conso-nants	Total Vowels	Sounds in Se-quence	Intrusion				
Mental Age Range: 9-00 to 10-11 Years											
7	11-08	10-00	86	66	34	99	6	29	16	32	26
15	12-10	10-00	79	73	38	110	5	86	38	40	34
26	9-07	10-00	101	73	33	102	9	63	28	80	26
22	11-00	10-00	90	62	26	79	40	44	23	31	31
1	12-11	10-02	80	73	31	104	10	81	22	99	22
18	11-06	10-02	88	74	37	111	4	57	29	92	23
17	13-00	10-08	83	70	36	105	8	71	33	109	30
45	11-01	10-08	95	70	35	105	6	71	25	79	19
6	12-08	10-10	86	63	27	85	15	38	24	88	39
42	11-01	10-10	96	71	33	103	13	76	37	121	38
46	11-00	10-10	97	73	34	107	8	55	35	95	31
Mental Age Range: 11-00 to 12-11 Years											
16	13-00	12-02	93	74	37	110	3	69	36	114	38

achievement may have been reflections of growth patterns in children. Yet, some caution is warranted in evaluating performances of children on the Auditory decoding and Vocal encoding subtests since low first-year achievements on these tasks did not appear to be especially accurate assessments. Likewise, performances of many children on the Visual decoding subtest on the second evaluation were higher than those of the first evaluation period.

One further problem of interpretation of second- and third-evaluation performances was this: Although performances of a number of children reached ceilings on certain subtests, none of the ITPA measures exceeded a language age of 9-06 years. Thus, language functions of children of 10 to 14 years in chronological age may have been impaired yet could not be accurately assessed on the basis of these test performances.

(d) On the basis of first-year evaluations, it was difficult to ascertain general trends among performances of children on Auditory-vocal and Visual-motor association subtests. Most children varied in their performances, but there were no clear-cut patterns. Even with changes in achievement over the second year, patterns of performance of children on the second and third evaluations were much more consonant and tended to move in the same direction to a greater extent than achievements on first and second or first and third evaluations. These shifts were not conceived to be actual changes in cognitive styles but another manifestation that patterns of functioning on the first-year evaluation were not clearly differentiated.

(e) Considerable research on cognitive performance and learning in children identified as "mentally retarded" has reported that such children are characterized by short-term memory deficits. Some writers (Belmont, 1966; Goulet, 1968; Lipman, 1963) have maintained that findings are far from consistent. Performances of children in the present study on Auditory-vocal and Visual-motor sequential subtests seem to support the latter contention. Many children continued to display difficulties in accomplishment of such tasks; however, on both the second and third evaluations there were children who reached ceiling language ages respective to these subtests. Moreover, performances of children on the second evaluation were much more clearly defined than those of the first evaluation; and these results, which appeared to be highly congruent with patterns of cognitive strength and weakness of the third evaluation, revealed that performances of children across these subtests were not uniform.

(f) Finally, variances among performances of children on individual subtests did not always move in the same direction over the three evaluations. In reference to Table 18, achievements on the following subtests became increasingly less variable: Auditory decoding, Visual decoding, and Visual-motor association. These subtests became more variable from first to second evaluations, then became less diverse on the third evaluation: Auditory-vocal association, Vocal encoding, Auditory-vocal automatic, Motor encoding, and Visual-motor sequential recall. Auditory-vocal sequential recall of children was less variable on second (standard deviation, 3.83) than on first (6.32) performances; diversity again increased on the third (4.30) evaluation. Total ITPA scores were less variable on second and third evaluations. Standard deviations for the three evaluations were 22.48, 19.48, and 19.82, respectively.

2. Performances of individual children on the Detroit Tests of Learning Aptitude, like achievements on the ITPA, revealed some fluctuation, regression as well as gain, over the three evaluation periods. Thus, the following comments on variabilities and consistencies in achievement of children certainly do have exceptions. In general, however, these tendencies across the three evaluations were apparent.

(a) Cognitive styles seemed to be quite stable: higher performances on certain tasks often were reflected on all three evaluations; lower achievements revealed similar patterns.

(b) Performances of children displayed greater degrees of change on subtests where they had initially functioned on higher levels than on those tasks of lower achievement. Thus, on the third evaluation a number of children were performing at mental age, if not chronological age, levels of expectancy on subtests of their greatest strength.

In addition, performances of some children on the Detroit Tests seemed to support the contention that severe auditory impairments were extremely difficult to modify. Such tendencies may have been reflections of such factors as characteristics of auditory disorders, the nature of particular subtest stimuli, and/or special difficulties of teachers in attempting to remediate such disabilities.

(c) As guides to prediction of levels of functioning, mental age and chronological age were not always accurate indicators on second and third evaluations.

(d) Achievements of children on the Detroit Tests reflected greater dispersions of scores on individual subtests than performances on the ITPA. In large part, these differences in variances seemed to arise from diverse test structures; i.e., the Detroit Tests included subtests which could be used to evaluate older children and adolescents, as well as very young children.

Variances of performances on the five subtests did not consistently tend in the same direction. Scores of Auditory attention span for unrelated words (simple score) and the Auditory attention span for related words fluctuated to a negligible degree. The weighted scores of the Auditory attention span for unrelated words, Visual attention span for letters, and Disarranged pictures subtests revealed small increases in variability on the third evaluation. Simple and weighted scores of the Visual attention span for objects became increasingly less variable from the first to the third evaluations.

In the overview of second-year observations, five conditions which appeared to have bearing on the direction of variances were considered. At least four of those points seemed to be appropriate to these subtests. Specifically, it was conceived that stable rates of change in children may have accounted for the consistency in performances on the Auditory attention span for unrelated (simple score) and related words subtests. Among the five subtests, tasks of the Visual attention span for objects were most easily accomplished by a number of children; and this factor may have accounted for the drop in both simple and weighted score variances on the third evaluation. Further, increasing variances in performances on Visual attention span for letters and Disarranged pictures subtests may have been reflections of differential rates of growth among children. Too, the Disarranged pictures subtest seemed to be somewhat more liable to performance variation than the other tasks of the Detroit Tests.

3. On each of the subtests of the Frostig Developmental Test of Visual Perception more than half of the children obtained ceiling perceptual age equivalents on the third evaluation. Greater numbers of children were able to accomplish Figure-ground discrimination and Form constancy tasks. Position in space and Spatial relationships subtests posed difficulties for slightly greater numbers of children. Tendencies of the majority of children to function at optimal levels of these tasks, as well as the fact that subtests were restricted in ranges of possible variance, appeared to be reflected in evidence of small standard deviations of performances on the third evaluation. Respective to the four subtests, these were 2.72, 2.11, 0.85, and 1.21.

Performances of children on the Frostig subtests revealed some tendencies that were similar to those characterizing achievements on other tasks. However, there were also some important differences. For example, although there were some fluctuations in individual child performances, patterns of prominent strength and weakness in visual and visuo-motor functioning seemed to be quite consistent between the second and third evaluations. Even with the possibility of practice effects on such tasks, children who had displayed extreme impairments on first and second evaluations functioned on much lower levels than other children. On the other hand, children who appeared to be experiencing only mild difficulties on first and second evaluations, in many instances, changed to an extent where they performed at maximum levels. Thus, much of the variance within performances of individual children on these subtests was flooded out in the third evaluation. In this respect, performances of children on the Frostig exemplified a substantial departure from the ITPA and Detroit Tests.

Problems of interpretation, similar to those of the ITPA, inhered in the fact that although children were performing at ceiling perceptual ages, it was impossible to make accurate assessments of older children and high-achieving children from these measures.

4. Unless children achieved at exceptionally high or low levels of performance on tasks defining the three Stanford-Binet derived functions, it was difficult to determine to what extent patterns of performance were actually congruent between first and third evaluations. However, in instances where performances were fairly clearly differentiated, styles of functioning of children seemed to be quite consistent. Fluctuations in performances of children most frequently occurred on auditory memory tasks, and to a minimal degree they were evident in relation to visuo-motor functions. Conceptual-language functions were extremely stable. Despite observations that IQs of some children dropped, not one child regressed in terms of performance scores relating to these functions. Similar to their performances on first-year evaluations,

children of similar mental ages and IQs displayed extremely variant patterns of achievement.

Variances among performances of children on conceptual-language tasks increased from 39.06 to 52.66 and on visuo-motor tasks, from 18.24 to 24.67. Performances on auditory memory tasks became less variable, moving from standard deviations of 15.22 to 14.26. These findings with regard to conceptual-language and visuo-motor functions were perhaps indicative of differential growth rates among children. The slight decrease in variance among performances on auditory memory tasks again may have been a reflection of somewhat stable degrees of change among children.

5. Performances of children on the Bender Visual Motor Gestalt Test tended to be extremely variable across all three evaluation periods. Increasing facility of reproduction within and among children did not appear to correlate closely with increasing chronological ages. With the following exceptions, it is most difficult to make general statements about characteristics of performances of children on these tasks.

(a) Although numbers of gestalts satisfactorily reproduced from recall and perception fluctuated within one or two points, some children who functioned on fairly high levels (i.e., accurately reproduced at least four or five gestalts) on first, second, or both evaluations demonstrated achievements on the third evaluation which were consistent with these results. This observation does not mean that children necessarily increased their levels of proficiency but that they functioned within somewhat equivalent ranges.

(b) Children who demonstrated prominent tendencies to fragment gestalts on first, second, or both evaluations revealed similar characteristics on the third evaluation.

(c) On all three evaluations, there seemed to be slight tendencies of children to function at higher levels on tasks requiring reproductions from perception. At the same time, however, performances of a number of children were far from consistent with this trend.

Perhaps one of the principal sources of the extreme variability across performances of children centered in the lack of structure which characterized this particular task.

Variances among dimensions of performance of children changed very little over the three evaluation periods. Highest degrees of fluctuation occurred in relation to satisfactory and simplified scores of perception. This finding seemed to arise in part from the restricted range of possible variance. Equally important, however, was this observation: Although performances of children fluctuated to such a degree that it was difficult to make interpretations, most children did not reveal substantial improvement in performances over the three evaluations. In other words, degrees of variance seemed to remain fairly constant.

6. Among the seven clinical tests, the Murphy-Durrell Reading Readiness Analysis consistently revealed the lowest degrees of variance among and within the five subtest and derived scores on the third evaluation. With a few exceptions, children at the termination of the study were functioning at optimal levels on all subtests. These final results seemed to follow initial patterns of the first evaluation where the majority of children achieved maximum levels of proficiency and tendencies on the second evaluation for those children who had had some problems to move to higher levels of functioning.

7. A number of children over the second and third evaluations continued to experience substantial difficulty in accomplishing tasks on the Durrell Analysis of Reading Difficulty. At the same time, however, with very few exceptions, they demonstrated varying degrees of positive change across all subtests. Examination of these gains within and among achievements revealed the following findings.

(a) On the third evaluation, the few children who were unable to attempt various subtests had been consistently unable to accomplish such tasks on first and second evaluations. These were children who were younger and/or more extensively impaired in terms of total intellectual functioning.

(b) A number of children across the three highest mental age ranges revealed marked gains on the Silent reading recall subtest; yet among all of the measures included in the Durrell Analysis, this subtest was characterized by performances where the greatest number of children were unable to accomplish task requirements.

(c) On the third evaluation, the majority of children were able to accomplish tasks on more primary subtests, such as identification of Capital and Lower-case letters, Blends, and Primary hearing sounds. These patterns were consistent with performances of children on first and second evaluations. A greater number of children began to approximate ceiling levels on the Primary visual memory subtest; yet similar to tendencies on first and second evaluations, more children still functioned less well on these than on Primary hearing sounds tasks.

(d) On the second evaluation, performances of some children on Intermediate hearing sounds and visual memory subtests regressed from first-year achievements. This trend may have been a reflection of lack of recall of reading skills which had not yet been stabilized following the interim summer period. On the third evaluation, however, performances of most children on both subtests were characterized not only by greater recall of letters and sounds but also by more accurate performances and greater confidence of children in approaching such tasks. As a result, intrusion of letters and sounds by children tended to decrease on the third evaluation.

Although there were variations in performances of individual children on these subtests, on the third evaluation there did appear to be a fairly high degree of consistency in achievement among children of mental ages 9-00 to 11-12 years. It appeared that such findings were manifestations of concentration of teachers on acquisition of specific reading skills, less pervasive specific learning disabilities and/or greater cognitive strengths, and lesser degrees of total impairment.

(e) On first-year evaluations, the observation was made that some children were able to accomplish tasks conceived to be considerably more complex with greater efficiency and ease than others which seemed to require lower-level cognitive functions. These patterns of performance were consistent with second-year observations. This tendency was not characteristic of all children. Further, it does not contradict evidence that specific learning disabilities of children were reflected in more general achievements of conceptual, language, and reading performances. However, the point does serve to emphasize the need for examining carefully the nature of particular cognitive strengths and weaknesses of children and the variant ways in which they may affect reading accomplishment. Moreover, such observations certainly do raise a question of the extent to which concentration of remediation effort on more fundamental abilities is transferred to higher-order learnings.

(f) From both classroom observation and examination of clinical tests, it was apparent that over the course and at the termination of the second year, children made fewer accuracy errors such as addition and omission of words and punctuation, mispronunciation, and word-by-word phrasing on oral reading and that speed of both oral and silent reading increased among those who were reading at the commencement of the study. A decrease in need for examiner pronunciation of words on these clinical tests was also noted on the third evaluation. This tendency seemed to be closely related to the degrees to which word attack skills and sight vocabulary of children revealed positive changes.

(g) Variances among performances on Durrell Analysis tasks are based on achievements of 23 children who completed all subtests administered. Reflecting increasing levels of performance with greater numbers of children obtaining ceiling scores, the following subtests revealed either progressive decreases in variances or no diversity in achievement over the three evaluation periods: Capital letters, Lower-case letters, Blends, Primary visual memory, Primary hearing sounds, intrusion of letters on Intermediate visual memory tasks, total vowels of Intermediate hearing sounds tasks, Word recognition, and Silent reading recall. Variances in total letters and total letters in sequence of the Intermediate visual memory subtest decreased slightly on the second evaluation, then revealed evidence of minimal increases on the third evaluation. To greater or lesser degrees, diversity among total consonants, total sounds in sequence, and intrusion of sounds of the Intermediate hearing sounds subtest increased on the second evaluation, then decreased on the third evaluation. In light of the observation that some children dropped in levels of performance on these tasks during the second evaluation period, these patterns were not surprising. Variances among performances of children on Oral reading and Listening comprehension recall changed very little over the third evaluation period, revealing only minimal increases. These tendencies seemed to indicate that rates of change among children remained fairly stable.

The multidimensionality, variability, and consistency in child performances exemplified in four learning profiles. The foregoing discussions of first- and second-year clinical observations have been concerned primarily with assessing multidimensionalities, variabilities, and consistencies in child performance and behavior. These characteristics of achievement on the seven clinical tests are graphically represented in the learning profiles of children compiled for the three evaluation periods. Thus, sets of profiles (Figures 3 to 14) of four children have been selected from each of the four mental age ranges for consideration. To the degree that performances of these children are similar to those of other children achieving within the ranges, they may be considered somewhat representative of commonalities in cognitive style. To the degree that their performances differ, they exemplify uniqueness which characterized their accomplishments and those of other children who participated in this study.

Figures 3 to 6 include profiles based on first evaluations; 7 to 10, second evaluations; and 11 to 14, third evaluations. Respective to the three periods, profiles are designated in red, blue, and black graphs. Numbers at the bottom of profiles indicate chronological age; IQ; mental age; and derived, subtest, and total scores (see Table 4 for number interpretations and code of functions designated for scores). Numbers on the right side of profiles indicate rank order positions of children within the total sample; these range from one to 42. Ranks circled in red represent scores of zero; in instances where several children obtained such scores, ranks rose to positions as high as nine points. Ranks circled in blue indicate that tests were not administered to children; again, in those instances where several children were

EVALUATION I

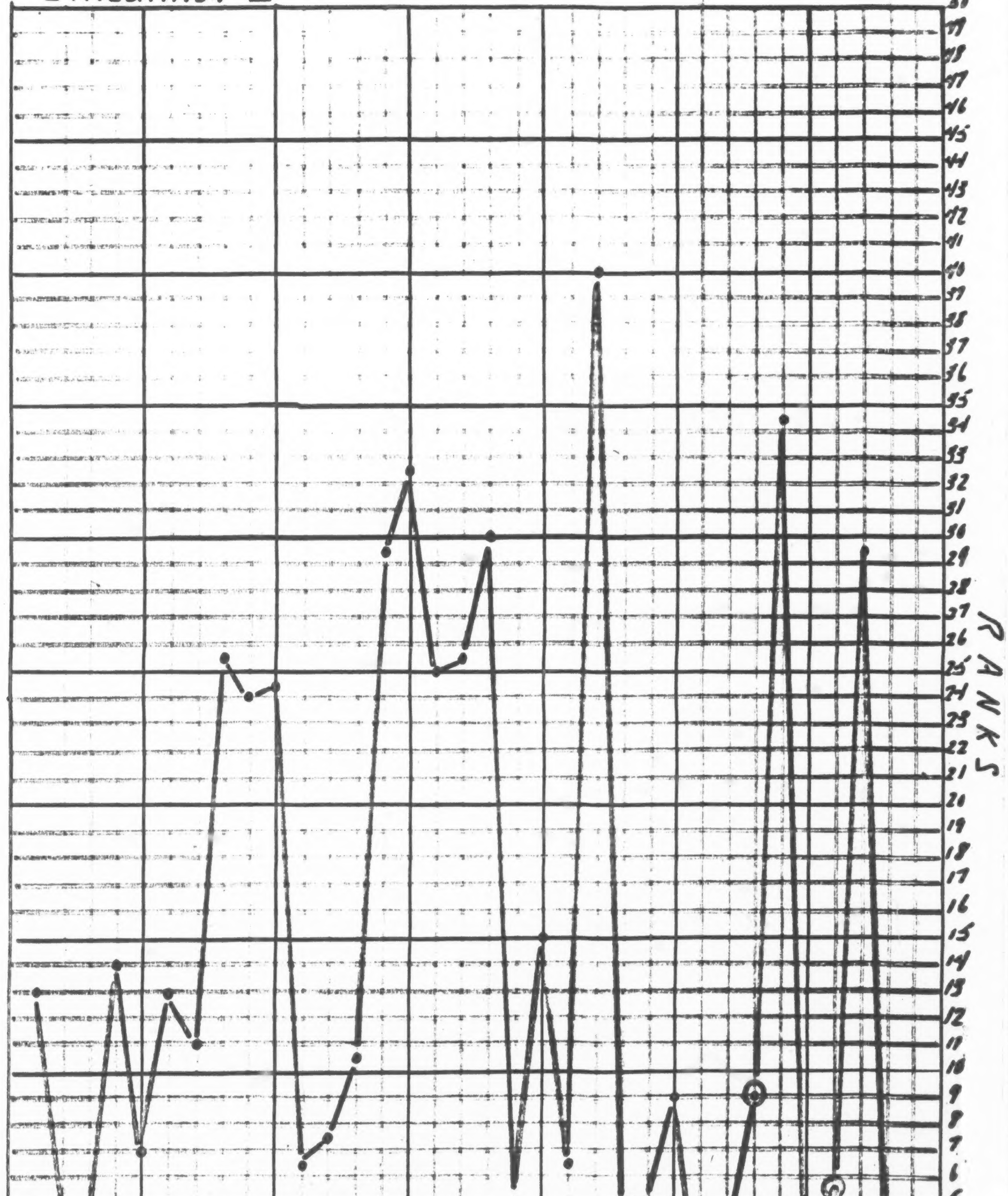

Fig. 3 CA. IQ. MA. and SUBTEST SCORES

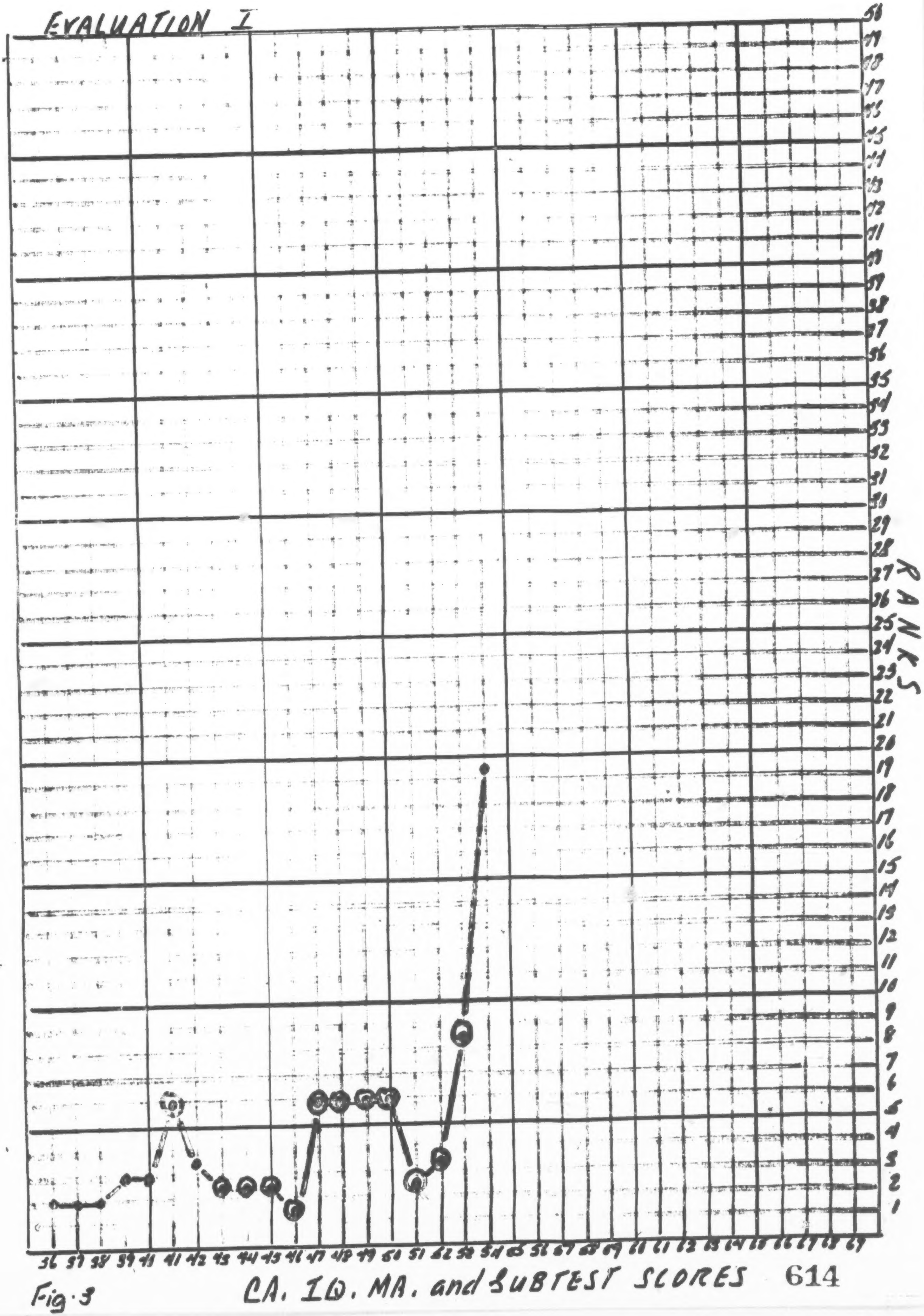

Fig. 3

CA. IQ. MA. and SUBTEST SCORES

#37

EVALUATION I

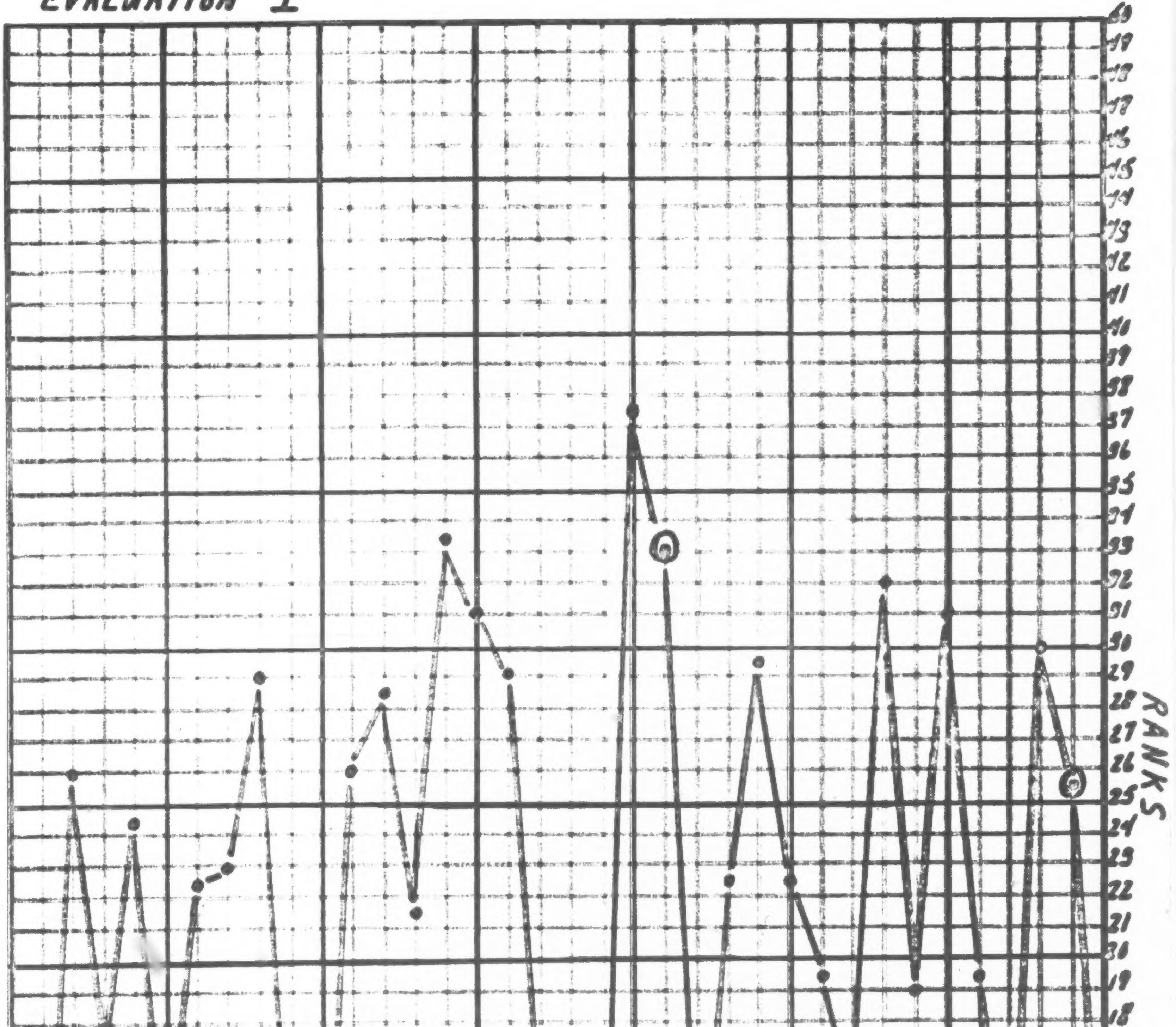

Fig. 4 CA, IQ, MA and SUBTEST SCORES

#37
EVALUATION I

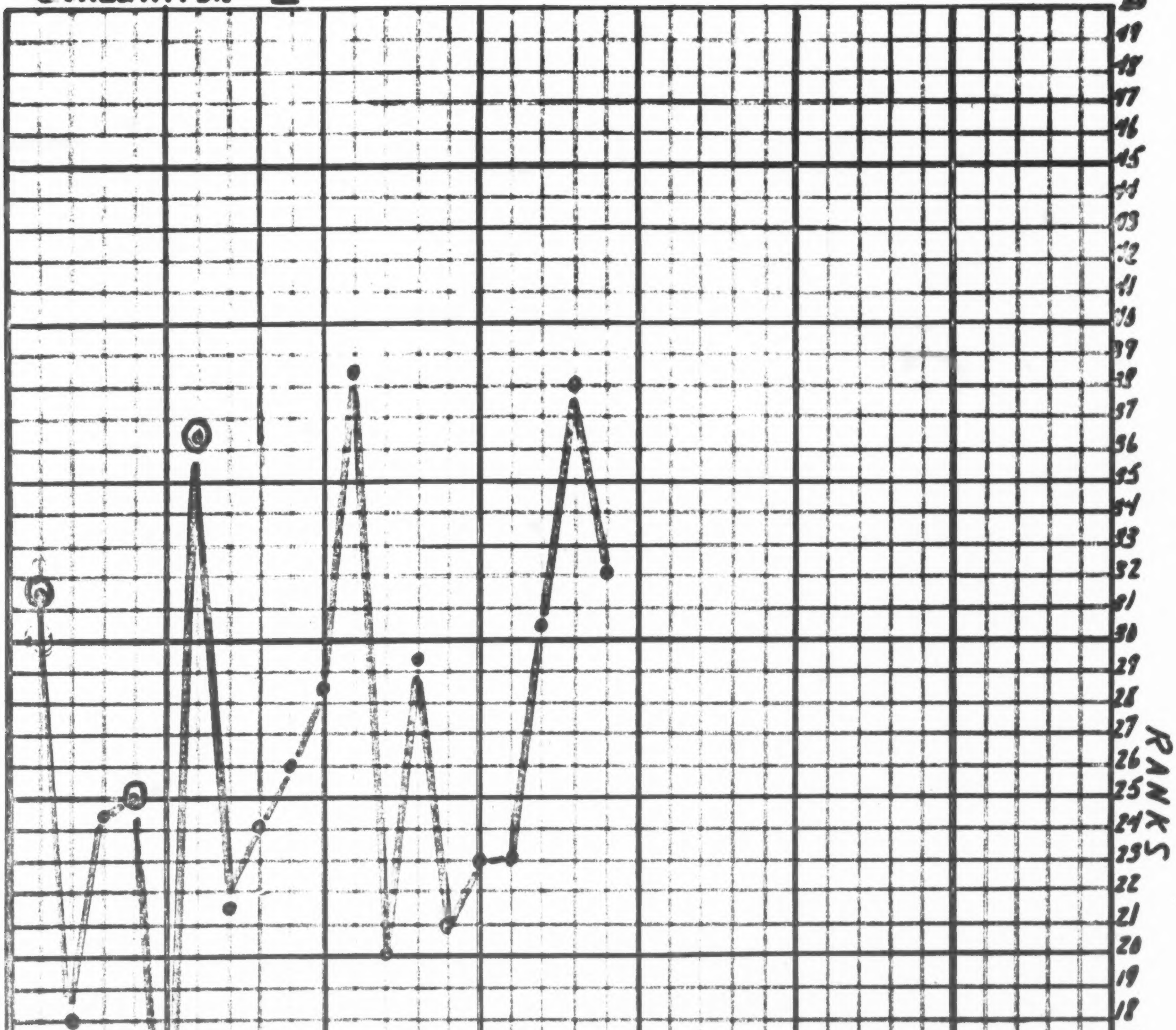

Fig. 4 CA, IQ, MA, and SUBTEST SCORES

EVALUATION I

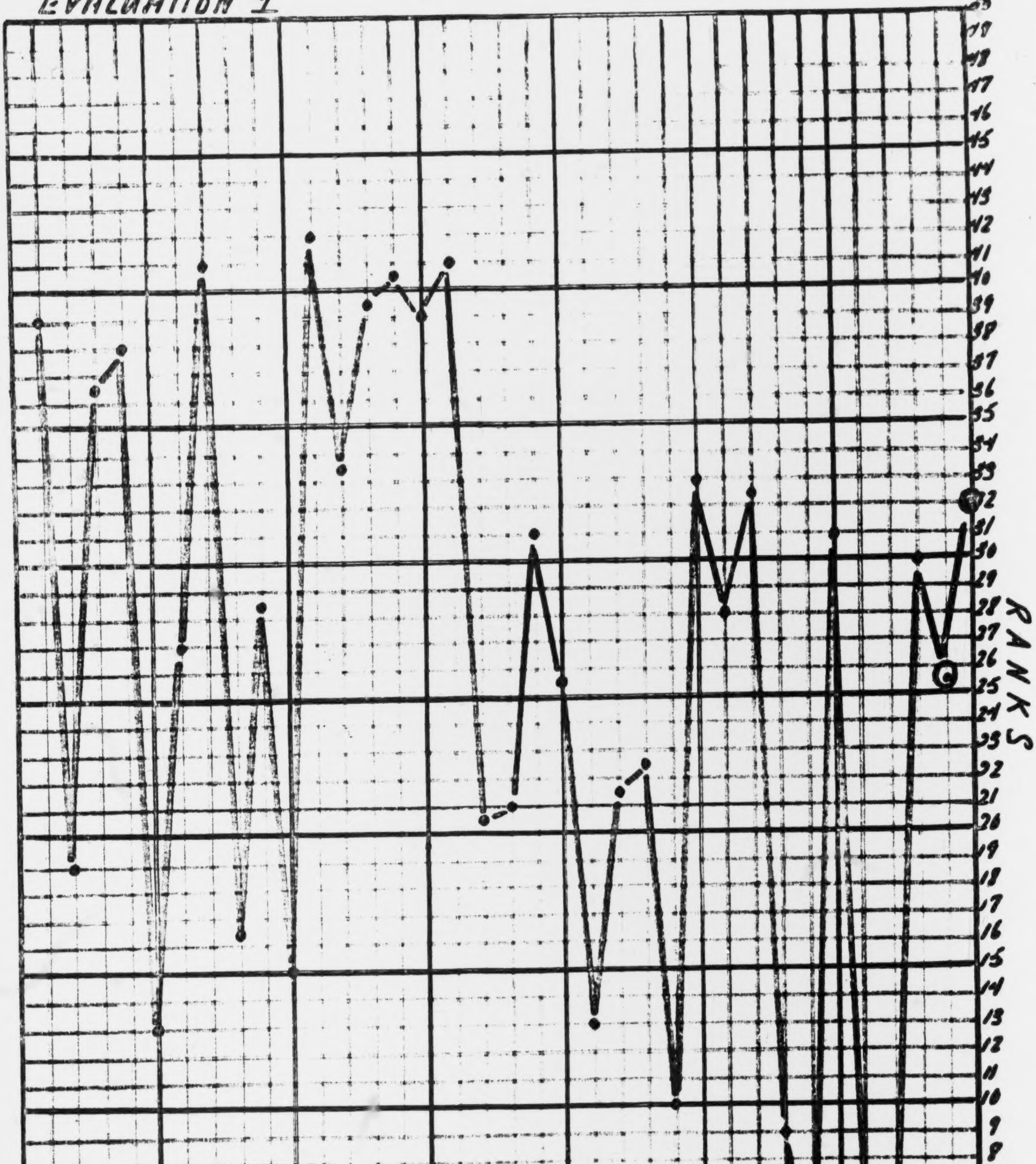

Fig. 5

#11

EVALUATION I

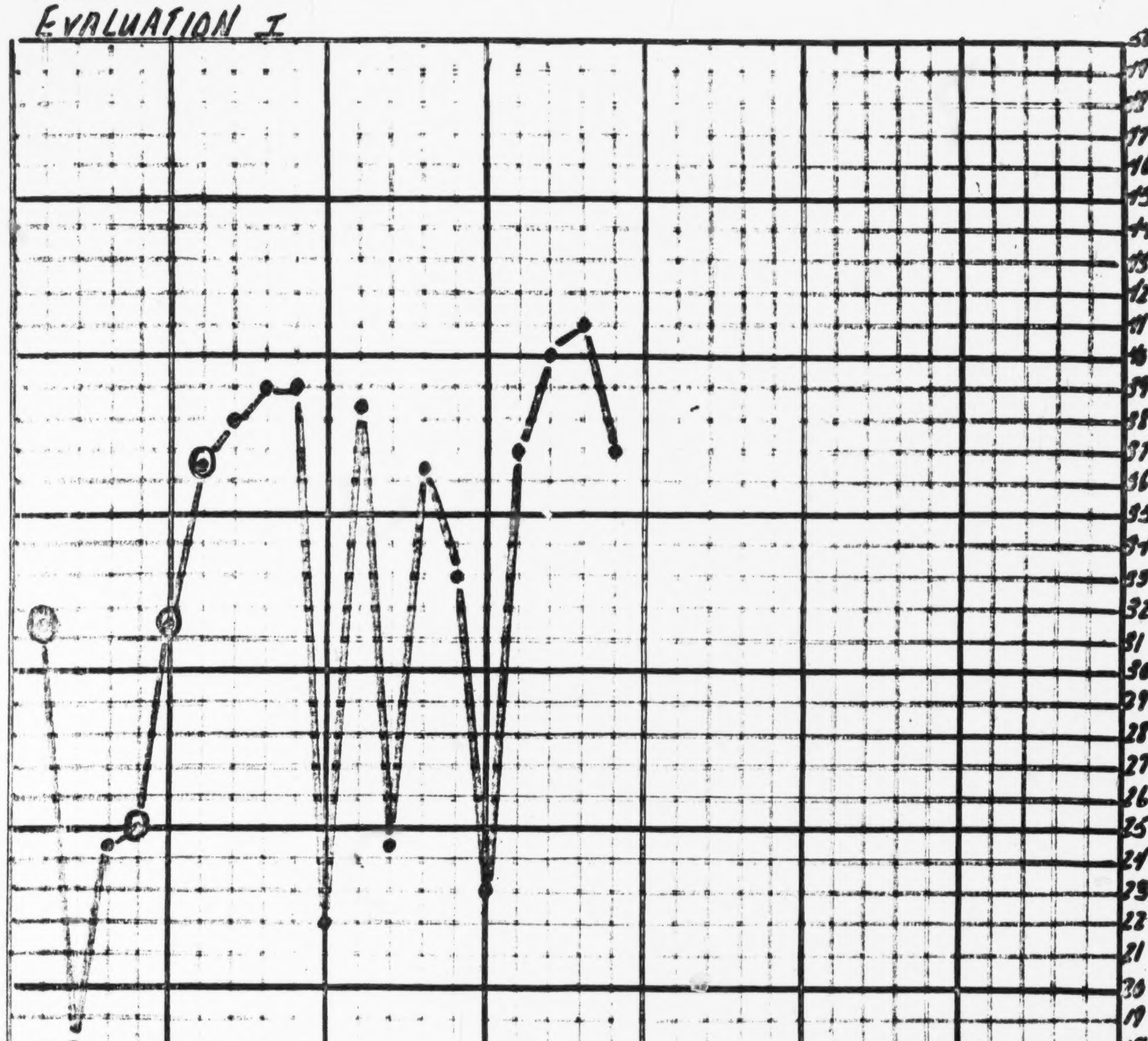

Fig. 5 CA, IQ. MA. and SUBTEST SCORES

EVALUATION I

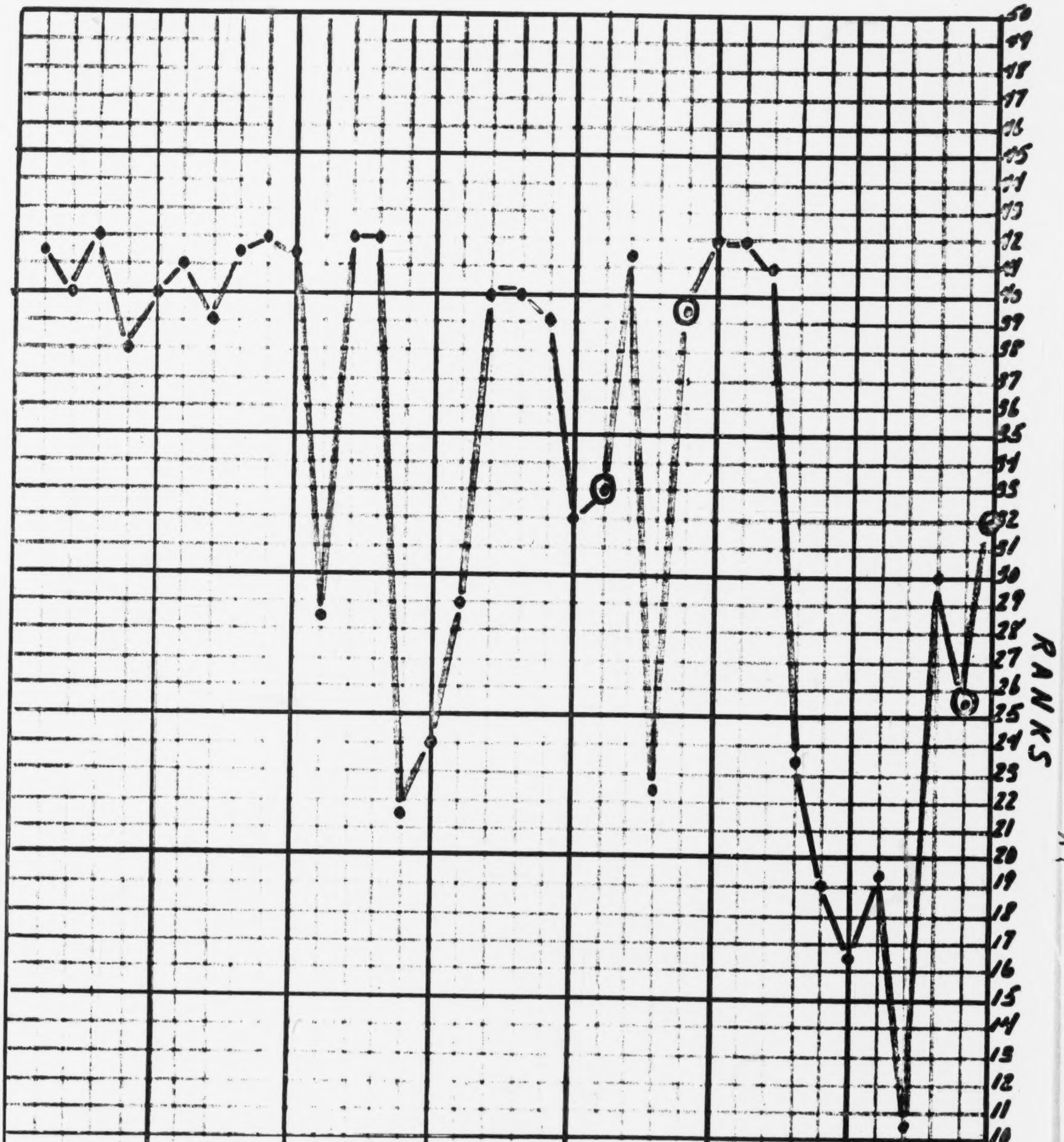

Fig. 4 CA, IQ, MA, and SUBTEST SCORES

ÉVALUATION I

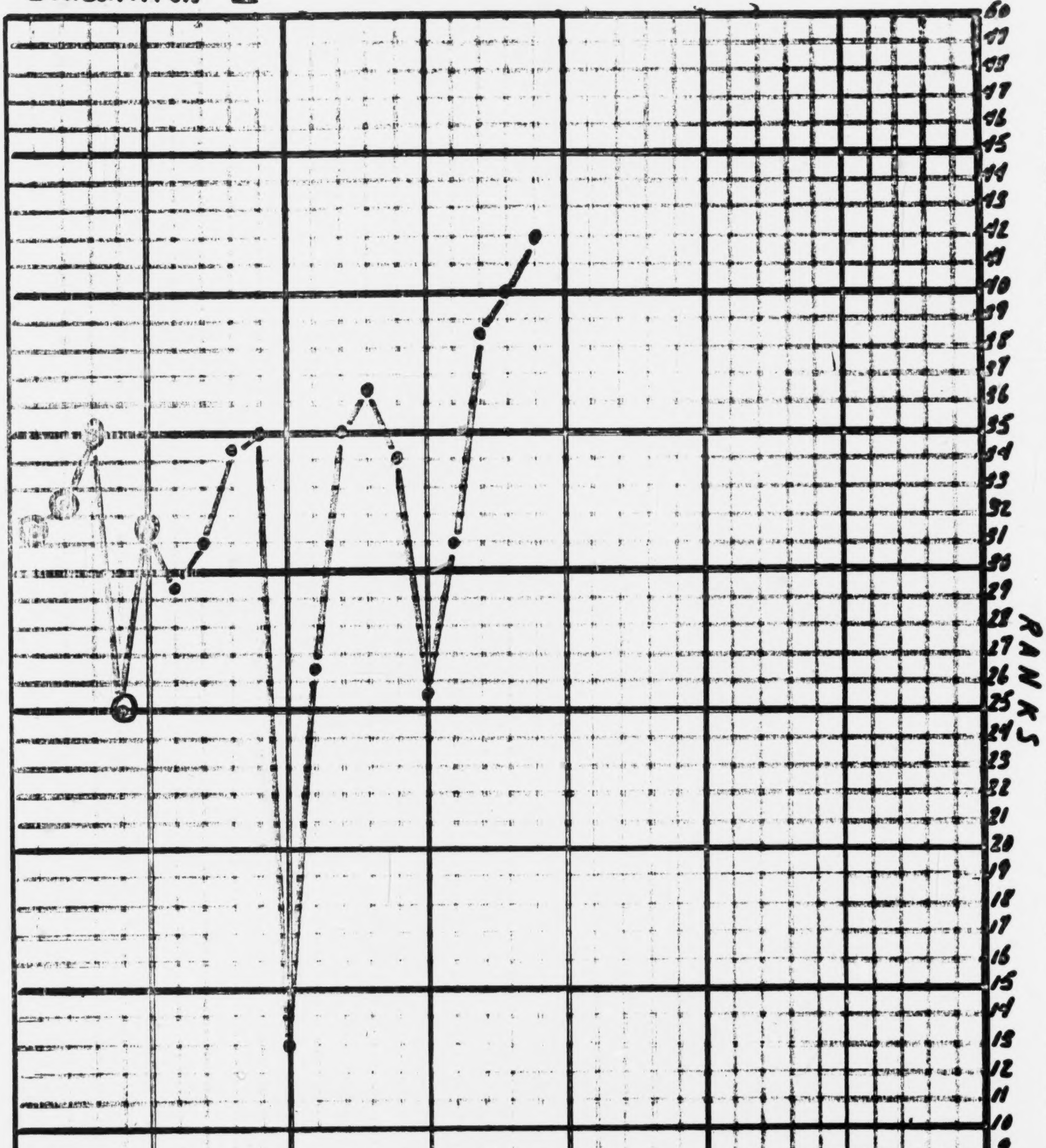

Fig. 6

EVALUATION II

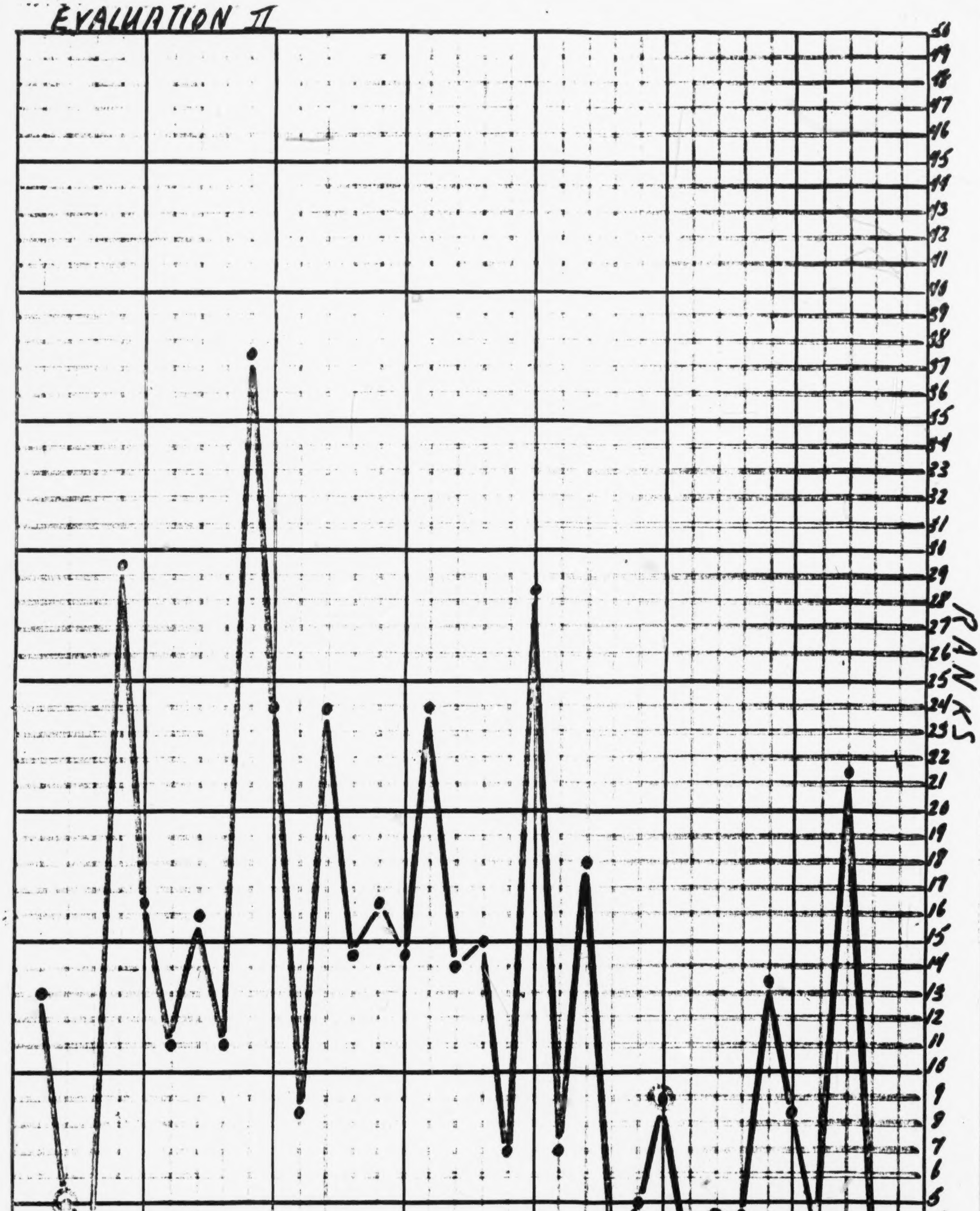

Fig. 7 CA. IQ. MA. and SUBTEST SCORES

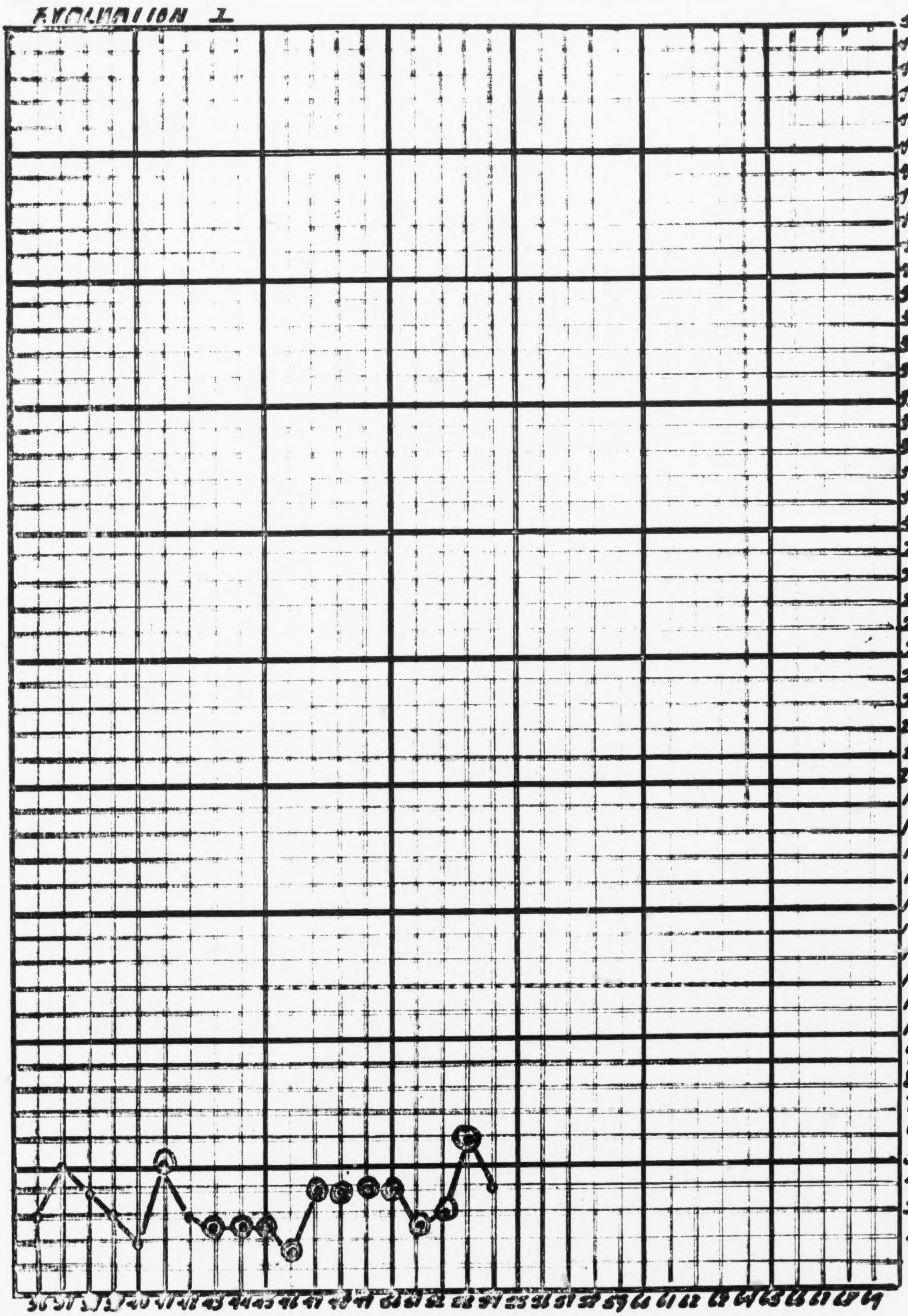

Fig. 7 CA. 16. MA. and SUBTEST SCORES

#31

EVALUATION II

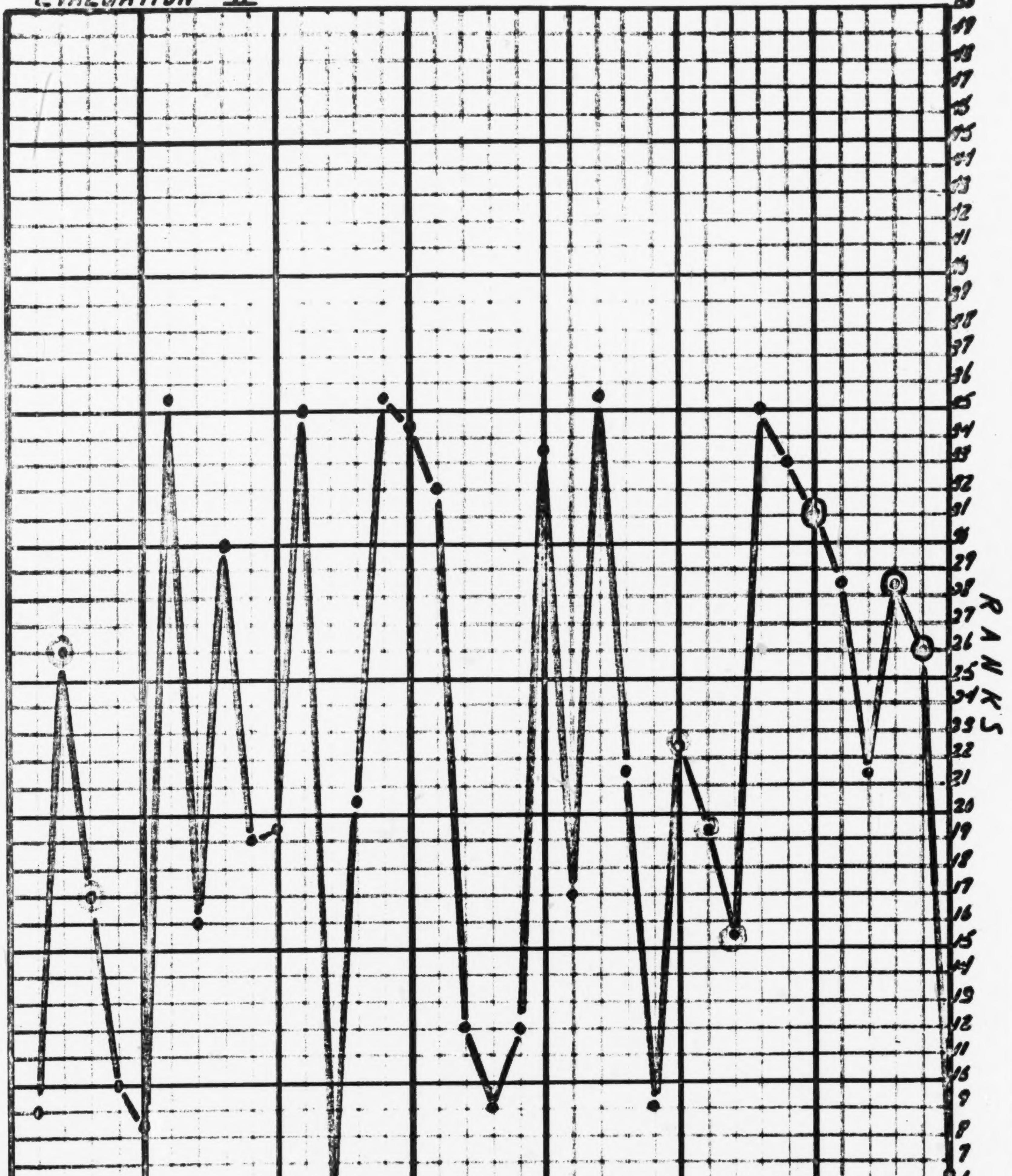

Fig. 8

EVALUATION II

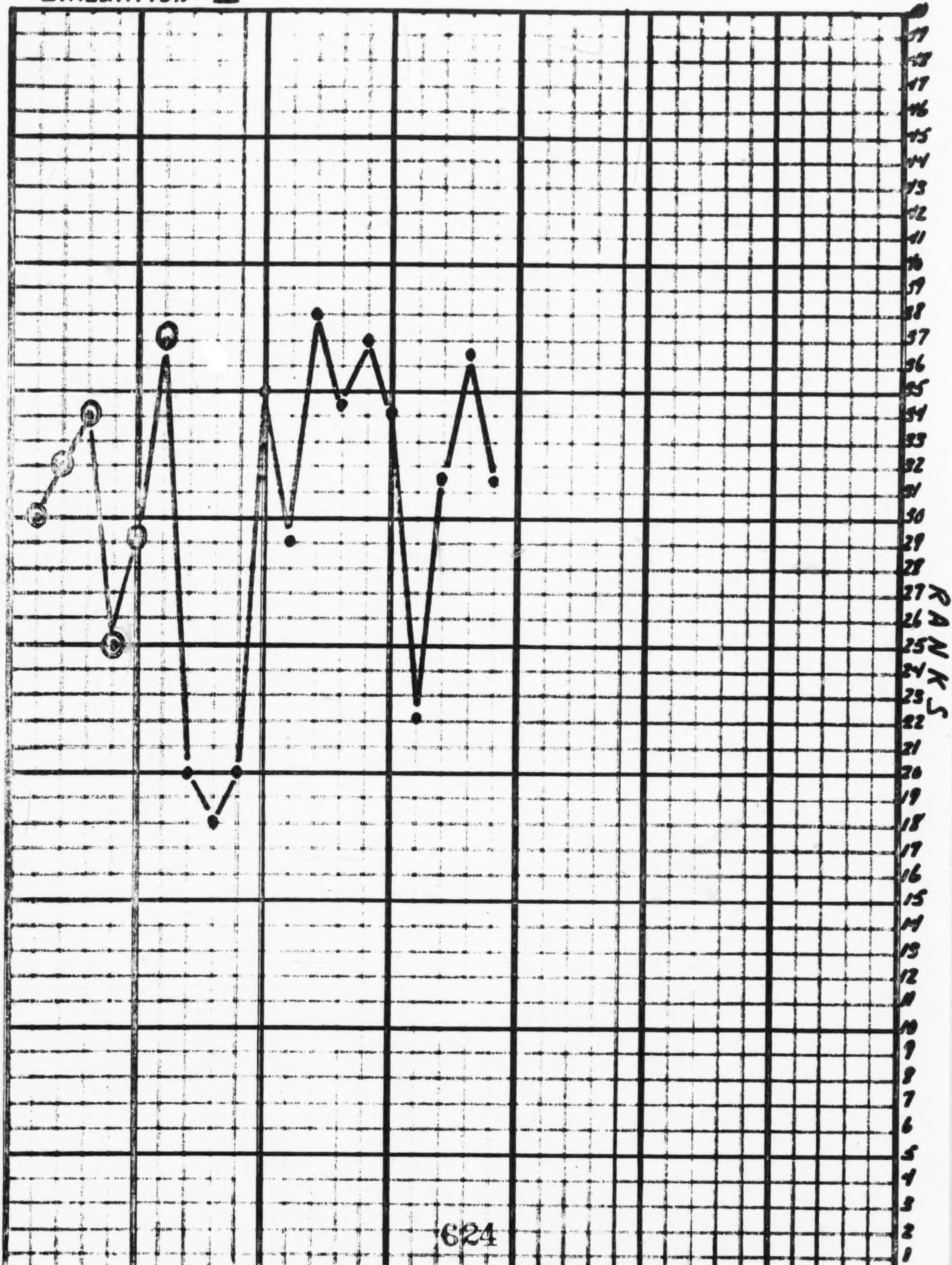

Fig. 8 CA. IQ. MA. and SUBTEST SCORES

#17
EVALUATION II

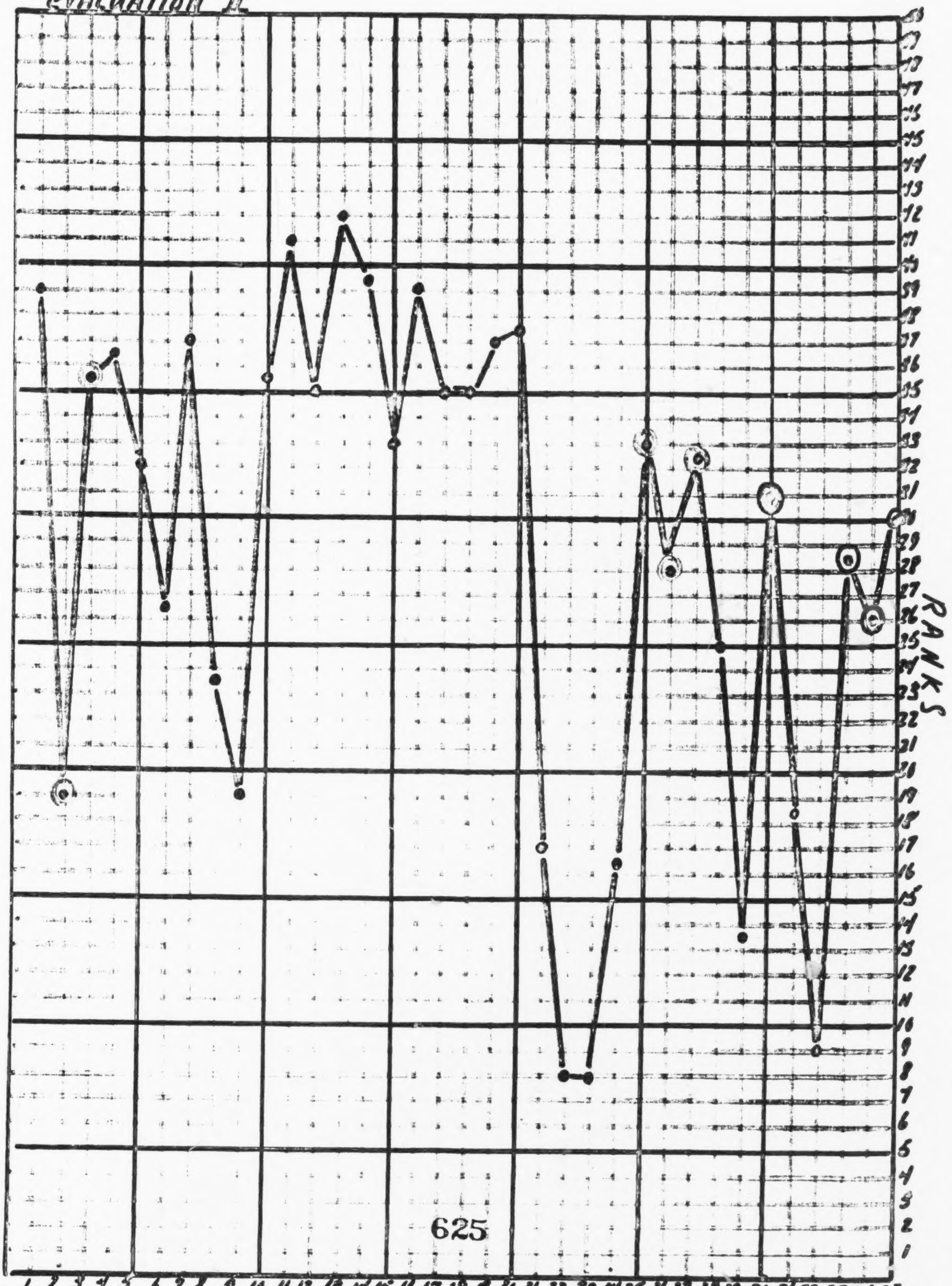

Fig. 9

MIT ..
EVALUATION II

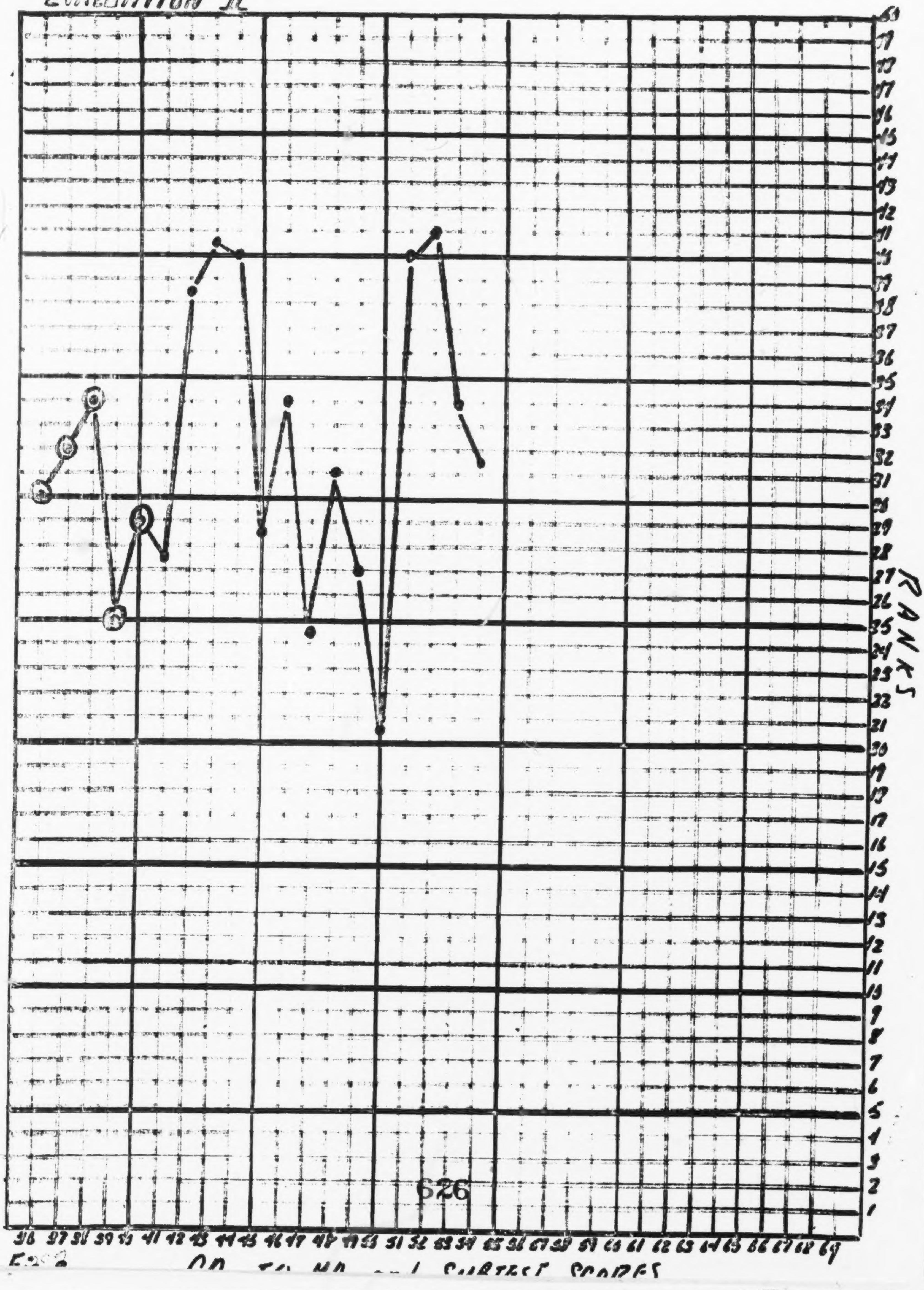

Fig. 8 OA, TO MA and SUBTEST SCORES

M-16

EVALUATION II

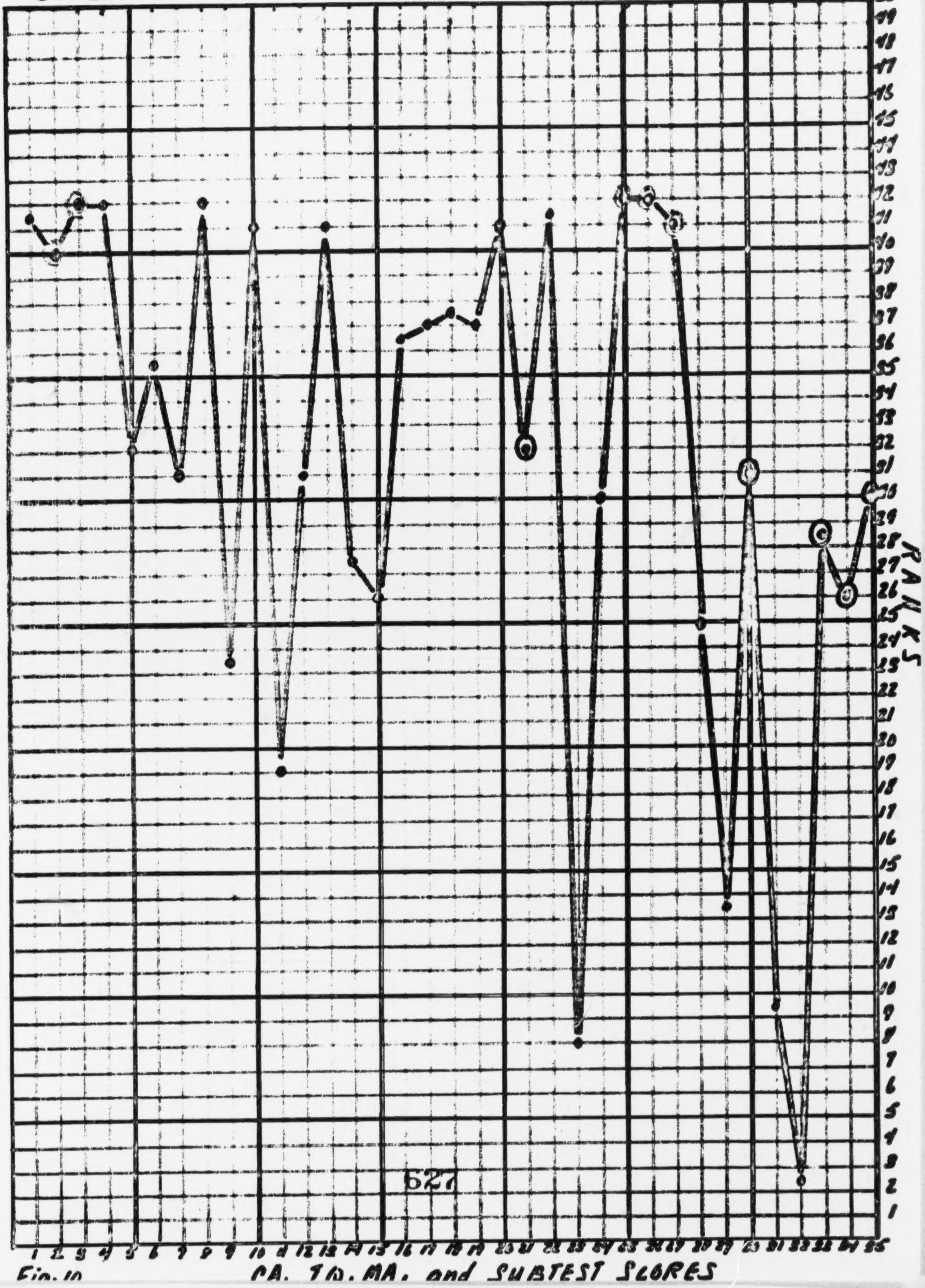

Fig. 10 CA, IQ, MA, and SUBTEST SCORES

#16-
EVALUATION II

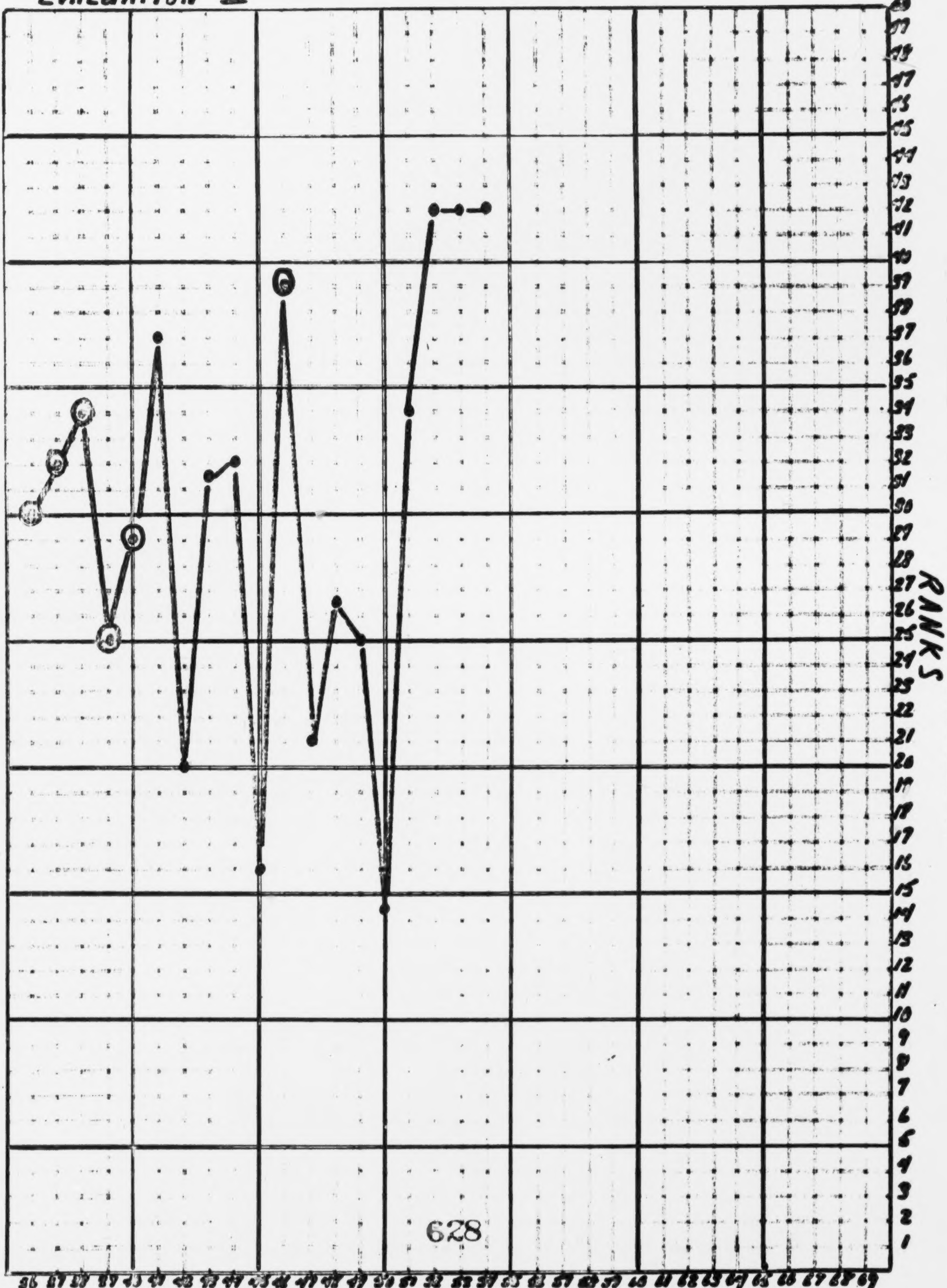

Fig. 10 CA, IQ, MA, and SUBTEST SCORES

#77

EVALUATION III

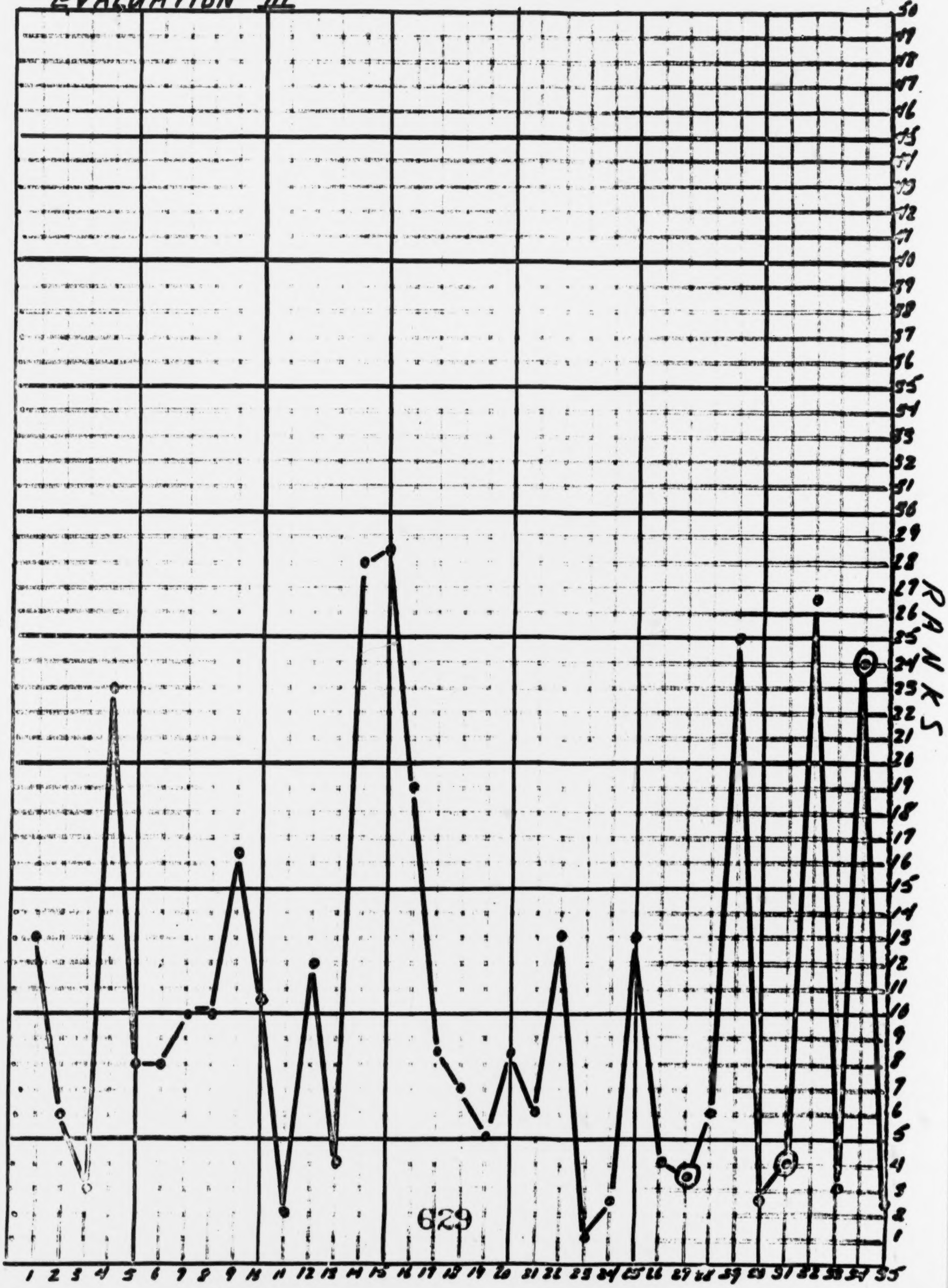

Fig. 11 CA, IQ, MA, and SUBTEST SCORES

EVALUATION III

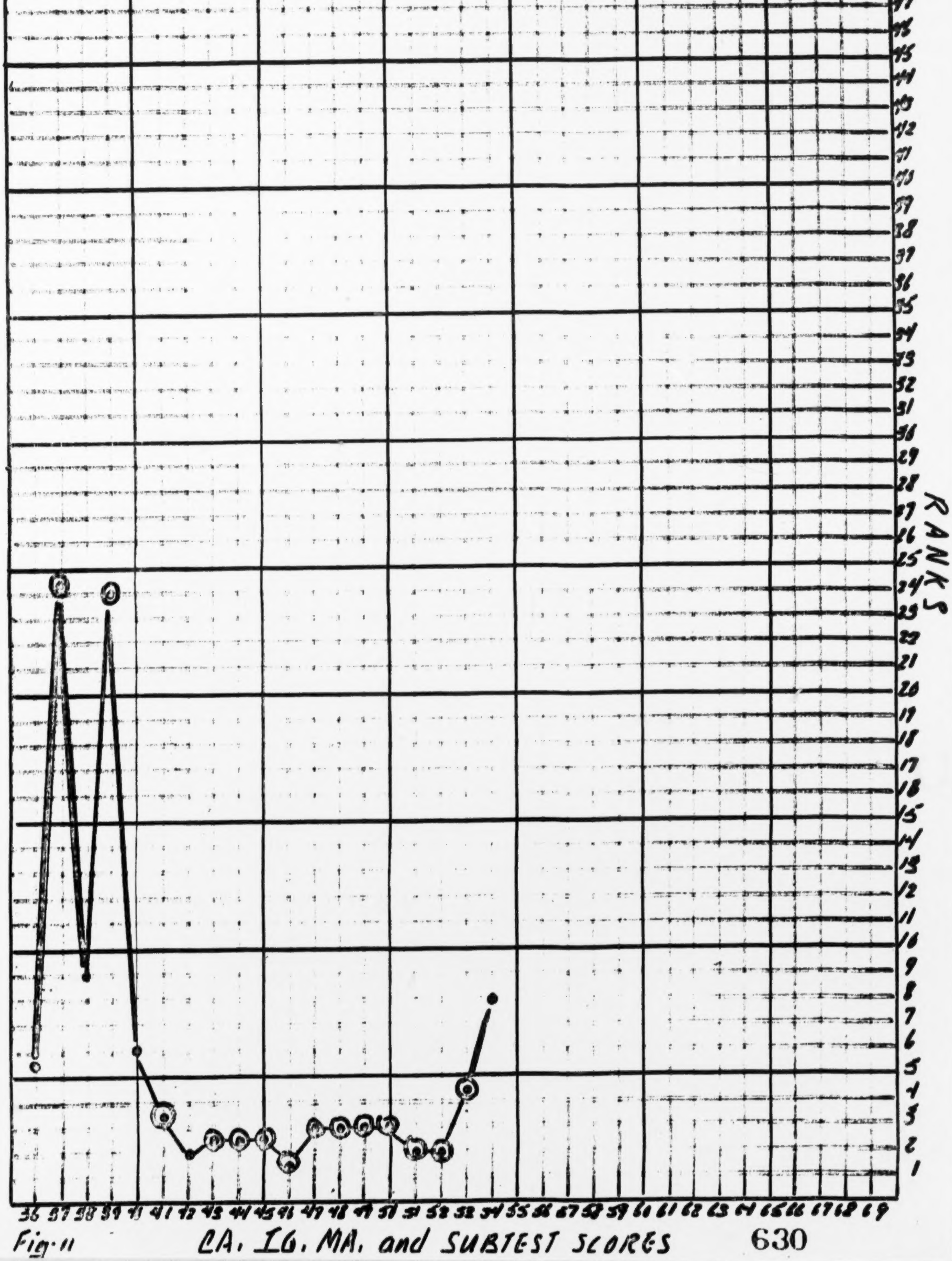

Fig. 11 CA, IG, MA, and SUBTEST SCORES

EVALUATION III

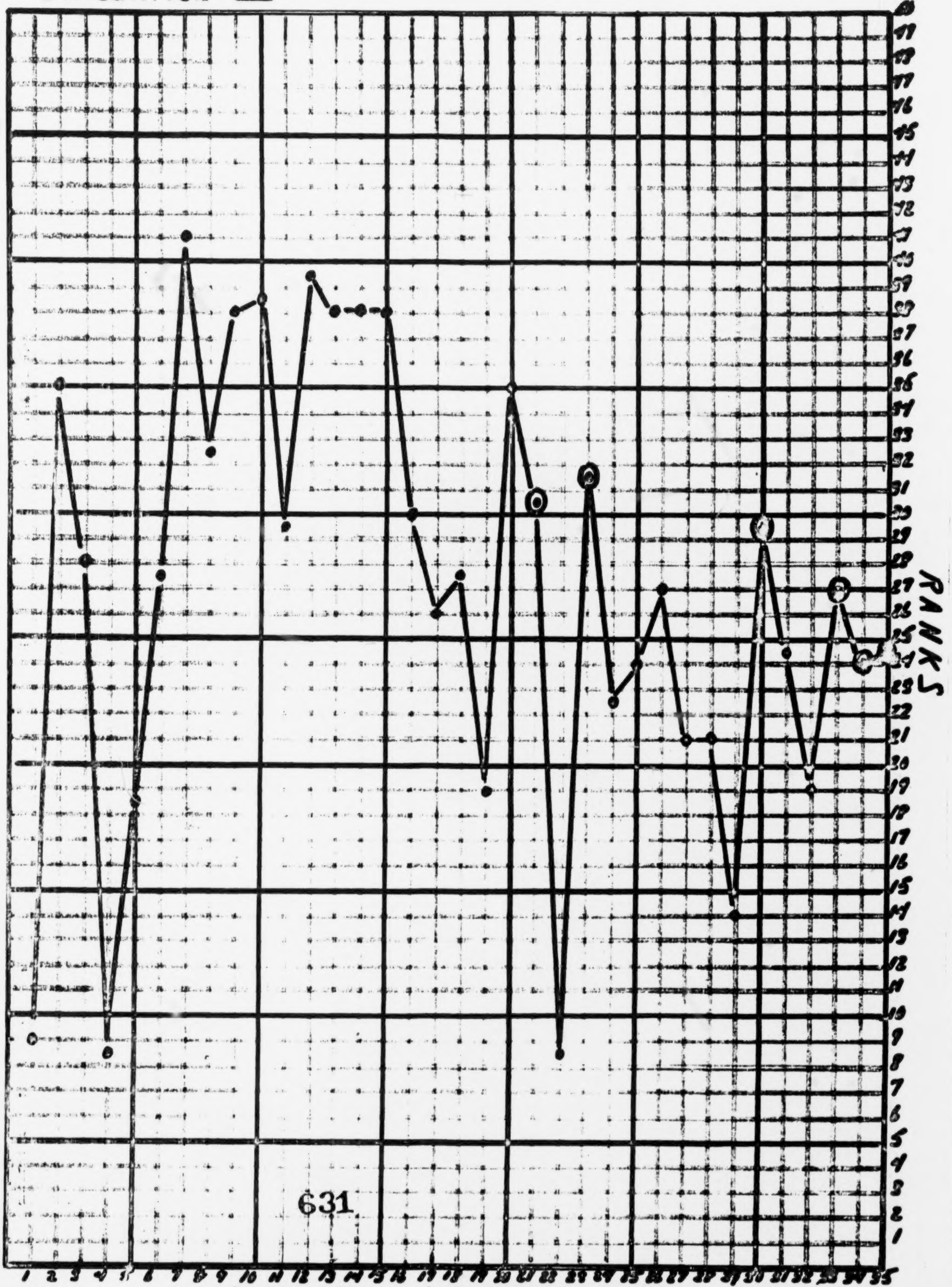

Fig. 12 CA. IQ. MA. and SUBTEST SCORES

EVALUATION III

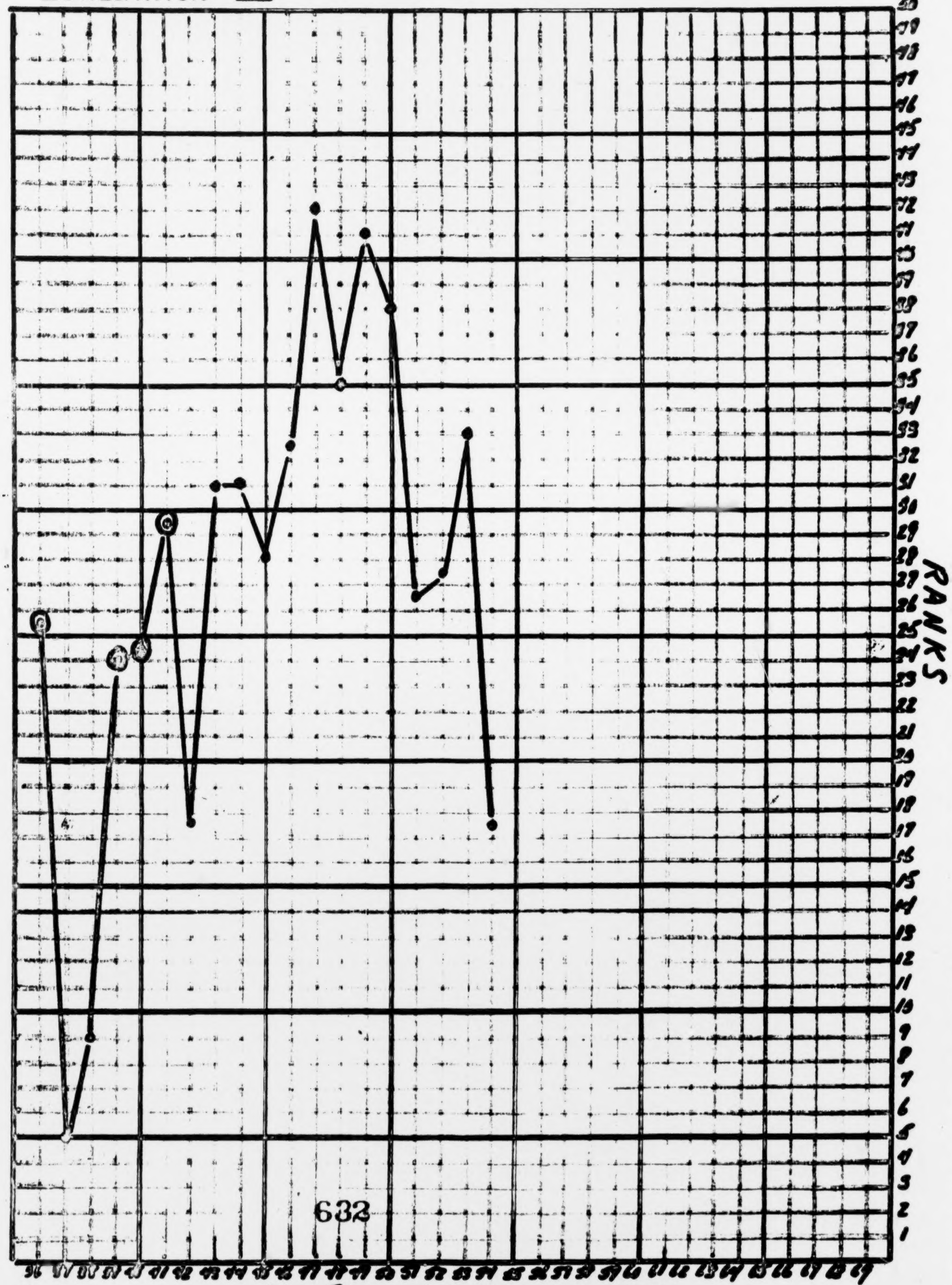

Fig. 12

EVALUATION III

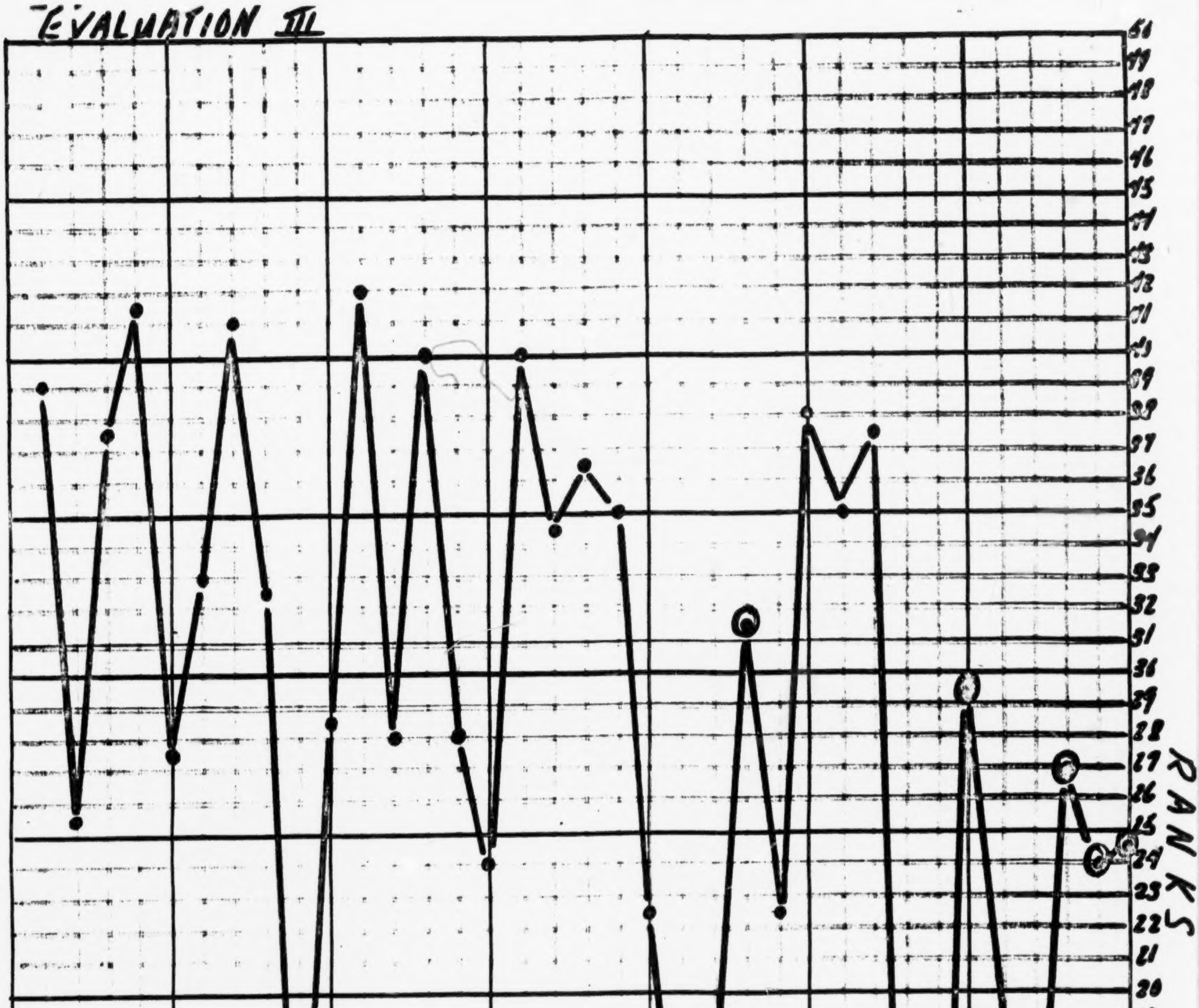

Fig. 13 CA. IQ. MA and SUBTEST SCORES

EVALUATION III

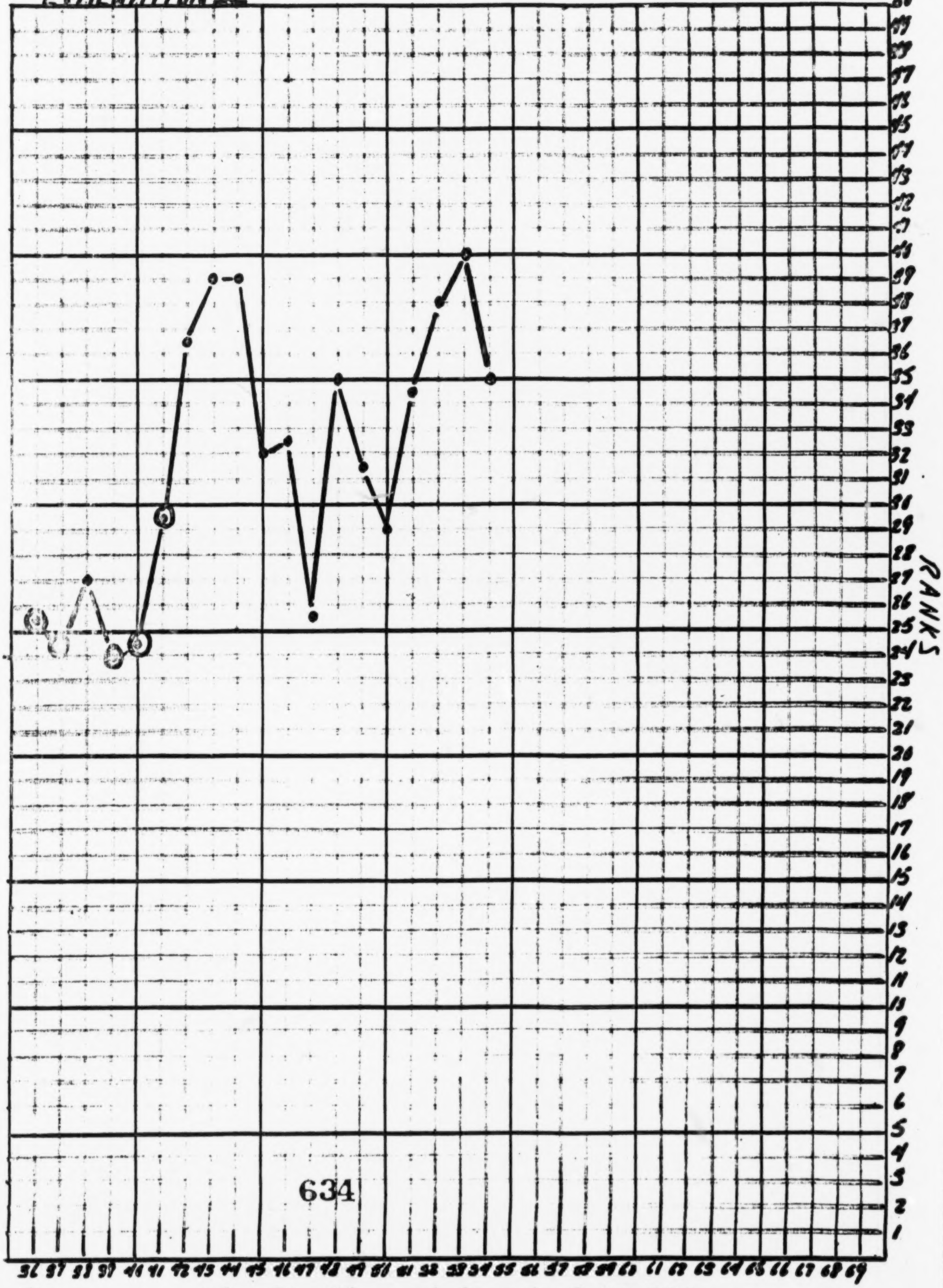

Fig. 13 CA. IQ. MA, and SUBTEST SCORES

EVALUATION III

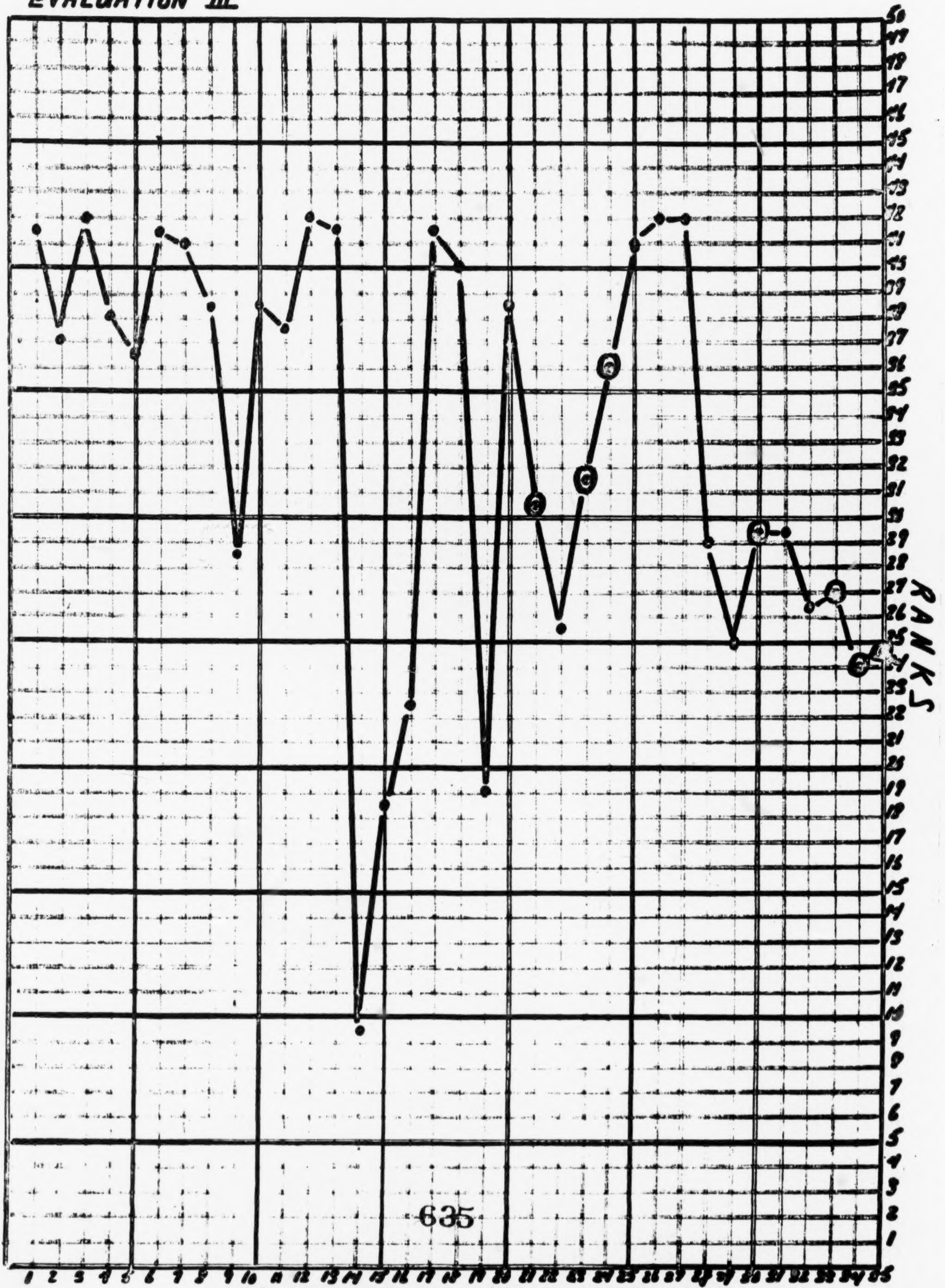

Fig. .. CA. To MA and SUBTEST SCORES

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EVALUATION III

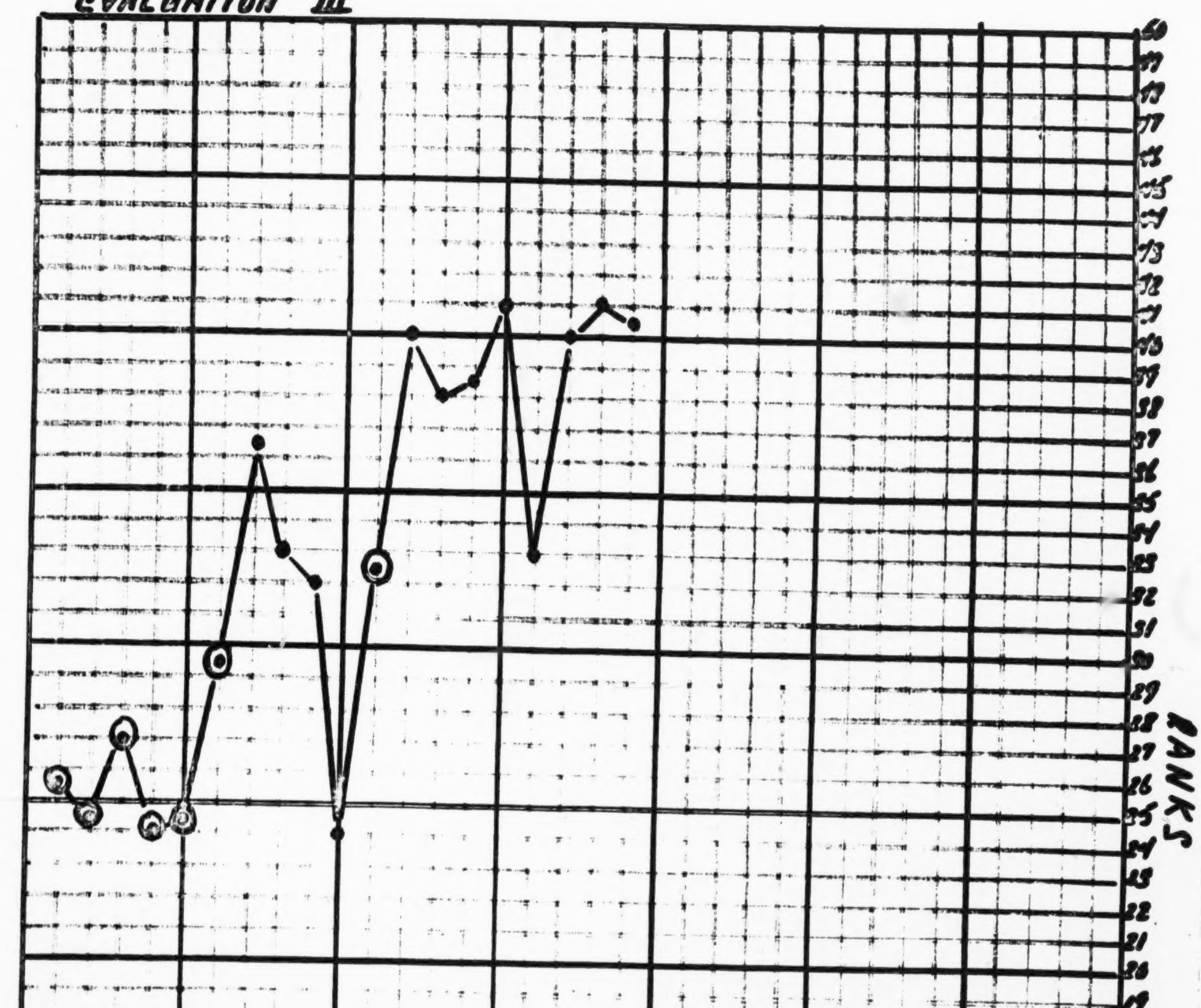

Fig. 14 CA, IQ, MA, and SUBTEST SCORES

unable to accomplish tasks, ranks were raised to higher positions. Ranks circled in black designate that children attained ceiling scores; where the majority of children functioned at optimal levels, ranks tended to drop and maximum positions of some subtests such as the Murphy-Durrell closely approximated the mean. Some caution, too, is needed in interpreting profiles in that variabilities reflect not only actual performances but also levels of functioning of the total group and different degrees of possible dispersion. Thus, although performances of children may have improved over the second year, if those modifications were not consonant with rates of change in other children, ranks tended to decrease. Finally, ranks circled in green on second evaluation profiles signify that scores were obtained on first evaluations; i.e., Stanford-Binet scores.

Examination of these 12 profiles across the three evaluation periods reveals the following findings.

(a) Although IQ and mental age (numbers 2 and 3 on the horizontal axis) were generally consonant with the majority of ranked scores, performances of children across the four ranges varied above and below these indices.

(b) Performances of children across all of the mental age ranges revealed greater to lesser degrees of fluctuation which were reflections of actual change in achievement and, to some extent, differences in ranks of scores across the three evaluations.

(c) In a very real sense, learning profiles do not reveal the degree to which performances on specific subtests changed. They do, however, reflect the extent to which dispersions of scores concerning individual children moved over the three evaluations and the consistency of performances across intellectual functions of greater strengths and weaknesses. In reference to the four profiles, it did appear that although particular ranks over the three evaluation periods were not identical, patterns of prominent strength and weakness remained fairly stable.

(d) Among the four profiles, there seemed to be a tendency for greater numbers of scores of Child 44 (of mental age range 5-00 to 6-11 years) to drop in rank. The profile of Child 37 (of mental age range 7-00 to 8-11 years) demonstrated increasing shifts over the three evaluations. Profiles of Child 17 (of mental age range 9-00 to 10-11 years) and Child 16 (of mental age range 11-00 to 12-11 years), who had initially demonstrated fairly high levels of functioning on the majority of subtests, tended to maintain the same positions, with the exception of rank decreases on subtests tapping more severely impaired intellectual functions. These observations seemed to be indicative of the following considerations: Performances of more severely impaired children probably changed at slower rates of growth than those of less severely impaired children. Similarly, specific learning disorders of less severely disabled children moved to lesser degrees or remained more stable than intact learning functions.

(e) Profiles of Child 44 over the three evaluation periods were characterized by greater numbers of subtests not administered or zero scores. Children across the other mental age ranges revealed evidence of greater achievement at ceiling levels.

(f) Finally, all of the children revealed considerable variance across the three evaluations; however, the learning profiles of Child 37 seemed to be somewhat less consistent than those of the other three children. In relation to Child 44, this tendency probably was a reflection of the fact that Child 37 was much less multiply impaired. In relation to 17 and 16, Child 37 was considerably younger in age. Possibly intellectual functions of these older students were more stable; too, it appeared that certain achievements such as the attainment of basic reading skills had been established to a greater degree in learning patterns of Children 17 and 16 at the commencement of the study. In addition, Child 37 was one of three children who participated the second year in a tutorial setting C4 and in a regular second grade class; Children 44, 17, and 16 remained in self-contained classes. The broader learning environment of Child 37 may have been manifested in the slightly greater degrees of variability and change which characterized her performances over the two-year period.

In many respects, interpretations of learning profiles were much more complex than originally anticipated. In light of the fact that they included a substantial margin of error and distortion, they required extremely careful study. On the other hand, they seemed to have an immense advantage in providing one scale of achievement across a wide array of cognitive tasks which dramatically portrayed the multidimensionality, variability, and consistency in various domains of intellectual performance of children in the present investigation.

Emotional behavior. Characteristics of emotional behavior of children the second year were similar to patterns described in the previous section on first-year clinical observations. In the main, predominant affective tendencies, like styles of cognitive performance, remained largely stable. At the same time, however, there were important changes in the emotional behavior of some children and these varied considerably in terms of the ways and degrees that they were manifested. Specifically, while some children continued to reveal characteristics such as hyperactivity, distractibility, or a lack of emotional overlay to an extent that they were apparent the first year, other children displayed evidence of greater or lesser degrees of adaptive behavior.

In terms of more positive changes, these observations were made the second year.

(a) Although some children still manifested symptoms of overreaction and excessive anxiety, they became better able to delay need for immediate teacher response and reinforcement.

(b) Some children who tended to be extremely hyperactive, inattentive, and distractible the first year seemed to become more able to approach learning tasks in more direct and efficient ways and over longer durations of time. In certain instances, these changes seemed to evolve in response to different learning environments with new regular or special class teachers. Regarding other children who remained with the same teachers, modifications appeared to be at least partly reflective of greater degrees of classroom organization and somewhat tempered debilitating reactions of certain teachers.

(c) Positive changes in terms of a greater openness to learning situations and somewhat diminished levels of anxiety and failure expectancies were observed in children attending certain classes. Procedures of this study did not include highly objective measures for correlating teacher variables with changes in child behavior. However, these differences were so generally apparent across children in particular classes that this conclusion seemed to be a highly tenable one.

(d) Another important change appeared to be manifested in increasing ability of some children to dissociate themselves from exclusive consideration of their own egocentric points of view and to begin to acknowledge the importance of feelings and attitudes of others, their peers as well as teachers.

(e) A number of children became considerably more able to cope with their anxieties, frustrations, and disagreements on a more verbal level the second year.

Such tendencies were not evident in the emotional behavior of all children. Although they were few, some did reveal symptoms of increasing emotional overlay or severe pathology. For the most part, these characteristics did not appear to arise directly from learning environments, although in at least two instances such influences were apparent.

Two crucial questions which the writer sought to examine in light of two-year observations of emotional behavior of children were these: To what degree could teachers change affective behavior of children, and in what ways were these modifications reflected in performances of children on cognitive tasks in class and on clinical tests? In response to the first, it became increasingly apparent over the course of the second year that competent, sensitive teachers did effect considerable change in wide dimensions of child behavior ranging from a tempering of mild and moderate anxiety to an enhancement of more adaptive coping mechanisms in instances of severe pathology. Degrees to which these changes were incurred varied a great deal among children; some were much more resistant to movement than others. Yet, in some children who had revealed most severe emotional disorders during the first year and at the commencement of the second, improvement was marked.

The extent to which such manifestations represented exclusive teacher influences remains largely undeterminable on the basis of this study. Insofar as human beings coexist in dialogue with others, sources of influence bearing on their behavior tend to have a pervasive, cyclical effect; i.e., original etiologies or change agents may set in motion a host of future events that may have far-reaching implications for home, school, or community relations. One manifestation of such influences among children in the present study was evident in this observation: As problems and anxieties of children began to subside, their interactions with peers revealed increasing positive changes; these events seemed to have somewhat reinforcing effects on behavior of children.

The second question of the extent to which behavioral differences were evident in class and test performances of child behavior likewise is not easily answered. Changes may be reflected in many dimensions of cognitive functioning in addition to terminal performances. Although it is impossible to make predictive statements in terms of correlations between gains in performances and modifications in emotional behavior, these observations were made:

(a) Changes in emotional behavior of children did not have a discernible bearing on predominant patterns of cognitive strength and weakness.

(b) In a number of children, the efficiency with which they approached learning tasks and their levels of achievement seemed to fluctuate with modifications in emotional behavior.

(c) Some children who appeared to be less severely disabled in terms of specific cognitive disabilities and extensiveness of total intellectual impairment changed to lesser degrees and functioned far less adequately than other children, revealing deeper severities of learning disabilities, who showed little evidence of emotional overlay. Thus, although cognitive strengths and weaknesses certainly were primary determinants of contemporary level of performance of children and their gains in achievement, this factor remained an important consideration: Emotional characteristics of children substantially influenced ways in which they utilized their learning assets and coped with their intellectual liabilities.

Characteristics of Performance and Behavior: Implications for Learning

Clinical test data and classroom observations revealed that children in this study experienced a wide range of learning and emotional dysfunctions which were variously manifested in disorders of listening, thinking, writing, spelling, reading, and talking. Although the majority shared in common the characteristic of multiple impairments, these tendencies were not of any sufficient degree of consistency among or within children that they might be considered uniform or universal attributes. With the exception of a few younger and/or severely impaired children, the majority revealed a great deal of variability among their test and class performances and characteristics of emotional behavior and considerable multidimensionality within their individual profiles of cognitive performance. Moreover, across the three evaluation periods, most children manifested varying degrees of fluctuation in their performances.

For the most part, emotional behavior and test and class performance reflected changes in positive directions. The majority of 23 children who had showed varying degrees of emotional overlay the first year displayed evidence of more adaptive, coping behavior. With the exception of a few whose performances remained more generally stable or regressed, children gained in achievement across many subtests and measures of general performance. Further, observations revealed that a number of children tended to approach learning tasks in more efficient and receptive ways. While such modifications were not always reflected in major final gains on clinical tests, they seemed to be of crucial importance to an enhancement of meaningful experiences of children in learning situations.

Amidst prevalent change, there were some consistencies in emotional behavior and performances which seemed to be fairly general to patterns of functioning of most children. These tendencies centered primarily in these observations: (a) Although psychological characteristics of children changed over the two-year period, prominent styles of cognitive and affective behavior seemed to remain quite stable; (b) learning disabilities of deepest impairment showed less growth in positive directions than cognitive functions of greater strength; and (c) behavior of children in particular classes, although diverse, seemed to be characterized both years by inattentiveness and distractibility.

In terms of learning, clinical observations of children in this sample seemed to hold the following implications.

(a) Although many children did experience severe multiple impairments, their cognitive performances were equally characterized by intellectual strengths which constituted vital sources for more effective learning. Lower levels of tolerance, extreme frustration, and slower rates of learning through most severely impaired intellectual functions seemed to indicate that for a number of children remediation efforts at least initially ought to be focused more heavily on abilities of greater strength. Such an approach is conceived to be equally relevant to more severely impaired children in whom learning abilities also were not uniform.

(b) Attitudes and feelings of many children seemed to be adaptable to a degree that modifications were feasible with the support and consistency of sensitive teachers. In light of the apparent bearing of such factors on performance, changes might have long-range effects on learning in children which, in the final analysis, would be as important as any specific attempts to modify patterns of cognitive functioning.

(c) Cognitive processes may be open to change through a concentration of remediation and therapeutic efforts on teaching children how to cope with problem-solving situations as well as on acquisition of specific knowledge and skills. Teachers both years who were most effective in moving children consistently focused on helping them to attain strategies toward subsequent information processes and to channel some behaviors that seemed to be interfering with learning.

(d) In essence, data of this study do not shed particular insight on ways in which patterns or rates of cognitive functioning in children might be substantially altered. On the other hand, it does seem to lend some understanding to ways of facilitating more efficient acquisition of knowledge and less painful learning processes. Ultimately, whether such impaired children do or do not learn will be contingent on not only their own liabilities and assets but also the sensitive understandings of their educational caretakers.

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Four Case Studies

The previous discussion has focused generally in performance and behavior characteristics of children. The present section will consider in more specific detail patterns of psychological functioning of four children. It has the primary intent of attempting to shed some insight on ways in which cognitive strengths and weaknesses and emotional characteristics appeared to facilitate or retard intellectual behavior and changes in academic achievement over the two-year period. The section will include three major parts.

(a) Criteria for the Selection of Children;

(b) Presentation of Four Case Studies;

(c) Comparisons of Four Styles of Cognitive Performance and Behavior: Implications for Learning.

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Criteria for the Selection of Children

Selection of children for the case studies was contingent on the following criteria.

(a) The children represented different patterns of cognitive strength and specific learning disabilities in their performances on clinical tests and in class.

(b) They were characterized by very different styles of emotional behavior.

(c) The children displayed variant gains in their specific learning abilities and more general academic achievements.

(d) They differed in the extensiveness of their total intellectual impairments and severity of specific learning disabilities.

Like children who were selected for brief discussion of learning profiles, these children are assumed to exemplify certain regularities in intellectual and emotional behavior. To the extent that they share commonalities with other children who reveal similar patterns of response, they may be considered representative of certain cognitive and affective characteristics. At the same time, however, each of the children displayed uniqueness in his behavior; and in these respects, their characteristics may not be viewed as typical of growth and response patterns of other children.

Case Study I: Child 26

Joey, 7 years and 11 months at the commencement of the study, was placed in special class in September 1968 from a regular first grade. He remained with teacher C1 throughout the diagnostic year, then was transferred to an integrated program where he was placed in a regular second grade class and received additional assistance in a tutorial setting with teacher C4. Joey was known to have moderate hearing losses in both ears. At the time of his placement in special class, he was reported to have been exhibiting disruptive classroom behavior in first grade. He was administered the Wechsler Intelligence Scale for Children in March of 1968 and obtained a Full Scale IQ of 74.

Emotional behavior. Over the course of the two-year period, Joey's behavior gave no indication of emotional overlay which was conceived to have a deterrent effect on his learning processes. Willingly, actively, and enthusiastically, he participated in learning situations. He was able to attend to specific tasks with little apparent visual or auditory distraction by his surrounding environment. Whenever unable to grasp concepts, he requested assistance. Otherwise he functioned comfortably in both independent and individual instructional situations. He was able to attend to tasks which focused specifically on his most severely impaired learning abilities without evidence of low tolerance, frustration, or excessive anxiety.

Although some difficulties arose the second year during his participation in regular class, he related well with his peers and teachers. He interacted freely and spontaneously with others and related in reciprocal ways, sharing as well as listening to ideas, attitudes, and feelings of others. Moreover, he displayed an openness with his classmates and teachers which was reflected in his direct responses concerning his own as well as their feelings and actions. These patterns of behavior were predominant both years.

Approximately three months prior to the close of school the second year, events somewhat frustrating to Joey and his regular class teacher transpired. Yet even under the pressures of these difficulties, he seemed to respond in highly positive and receptive ways. Specifically, following an extended illness of almost six months, Joey's regular second grade teacher came back to school. Not long after her return and subsequent to an apparently meaningful and uneventful learning experience with a substitute teacher, teacher C4 began to receive negative reports that Joey was defiant and provoking arguments with other children. Such behavior appeared to run counter to all observations both years and direct personal interactions of teacher C4 with the child. In essence, it seemed that the returning second grade teacher was not especially sensitive to the fact that Joey suffered from substantial hearing impairments and that his periodic unresponsiveness to her requests stemmed primarily from a lack of hearing rather than any attempt on his part to ignore her. Suggestions of inciting problems with other children were largely predicated on one incident where he rose to the defense of another child, then subsequently was attributed blame for two later episodes in which he had not been involved. Fortunately, teacher C4 was able to intercede and clarify both situations.

Following these events no further difficulties were reported. Joey continued to change in gainful ways socially and emotionally. Both years he had the support of two competent and sensitive teachers; undoubtedly, their assistance was immensely beneficial to his progress.

Characteristics of cognitive behavior. Joey's performances across the seven clinical tests revealed that although he experienced rather severe visuo-motor learning disabilities, other intellectual processes were generally intact. Further, he displayed highly consistent and pervasive auditory and visual memory abilities which facilitated acquisition and retention of academic skills and knowledge. Revealing marked gains far exceeding chronological age expectancies in his abilities of greater strength and lesser degrees of change in achievement on visuo-motor tasks, these patterns of cognitive functioning remained quite consistent on most subtests over the three evaluations. Thus, although he was one of the youngest children in the study, by the close of the second year Joey had acquired language, reading, and conceptual skills and abilities which were commensurate with or surpassed those of a number of much older children. Such gains in his performance were reflected not only in his levels of functioning on achievement tests. Within a two and one-half year period, his performances on standardized measures of general intelligence varied 27 points, ranging from a WISC Full Scale IQ of 74 to Binet IQs of 98 and 101, respectively, on first and third evaluations. Data included in Table 36, learning profiles presented in Figures 15, 16, and 17, and class and test observations seemed to substantiate these interpretations.

During the first year, patterns of cognitive functioning were already clearly evident in wide discrepancies among various performance levels on clinical tests. While the majority of his accomplishments on subtests of the Illinois Test of Psycholinguistic Abilities were relatively nondifferentiating, he attained a language age exceeding 8-06 years on Auditory-vocal sequential recall and an equivalent of 7-10 years on the Visual-motor sequential subtest. His lowest performance was evident on the Visual-motor association subtest, where he obtained a language age of

TABLE 36

CASE STUDY DATA: PERFORMANCES OF CHILD 26 ON SEVEN CLINICAL TESTS OVER A TWO-YEAR PERIOD

Child: 26 Date of Birth: 9/20/60

Teacher: C1; C4 & regular class CA (September, 1968): 7-11 years

Stanford-Binet		
1968-1969 Evaluation (1)	Score	Rank*
IQ	98	42
Mental age	8-04	27.5
Conceptual-language functions	80	29
Visuo-motor functions	12	9
Auditory memory functions	68	42
1969-1970 Evaluation (3)		
IQ	101	42
Mental age	10-00	32.5
Conceptual-language functions	144	32.5
Visuo-motor functions	30	20
Auditory memory functions	52	41

Illinois Test of Psycholinguistic Abilities			
1968-1969 Evaluation (1)	Raw Score	Language Age	Rank
Auditory decoding	23	6-05	19.5
Visual decoding	12	5-10	7
Auditory-vocal association	15	5-06	8.5
Visual-motor association	6	2-11	2.5
Vocal encoding	17	6-07	29.5
Motor encoding	14	5-10	17
Auditory-vocal automatic	12	6-01	15
Auditory-vocal sequential	30	8-06+	40
Visual-motor sequential	18	7-10	41
Total	147	6-02	21.5

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TABLE 36 (continued)

Illinois Test of Psycholinguistic Abilities

1969-1970 Evaluation (2)	Raw Score	Language Age	Rank
Auditory decoding	25	7-01	11
Visual decoding	16	7-10	16.5
Auditory-vocal association	20	7-03	21
Visual-motor association	15	6-01	9
Vocal encoding	23	8-11+	34.5
Motor encoding	20	8-08+	26.5
Auditory-vocal automatic	13	6-06	11.5
Auditory-vocal sequential	37	8-06+	42
Visual-motor sequential	14	6-00	17
Total	183	7-10	29
1969-1970 Evaluation (3)			
Auditory decoding	31	8-10+	23
Visual decoding	18	8-09+	13
Auditory-vocal association	24	9-00+	38.5
Visual-motor association	24	9-03	33
Vocal encoding	37	8-11+	42
Motor encoding	21	8-08+	28.5
Auditory-vocal automatic	23	9-06+	42
Auditory-vocal sequential	32	8-06+	41
Visual-motor sequential	24	9-00+	39.5
Total	234	9-04+	41.5

Detroit Tests of Learning Aptitude

1968-1969 Evaluation (1)	Raw Score	Mental Age	Rank
Auditory attention span for unrelated words--simple score	49	9-09	42
--weighted score	253	9-06	42
Auditory attention span for related words	55	7-09	38
Visual attention span for objects --simple score	37	7-06	20.5
--weighted score	180	7-00	18.5

(continued on next page)

TABLE 36 (continued)

Detroit Tests of Learning Aptitude

	Raw Score	Mental Age	Rank
Visual attention span for letters	4-3	8-03	21
Disarranged pictures	18	9-06	32
1969-1970 Evaluation (2)			
Auditory attention span for unrelated words--simple score	53	11-03	42
--weighted score	281	12-00	42
Auditory attention span for related words	63	9-00	41
Visual attention span for objects --simple score	54	13-03	42
--weighted score	288	13-06	41
Visual attention span for letters	5-1	9-00	30
Disarranged pictures	17	9-03	27
1969-1970 Evaluation (3)			
Auditory attention span for unrelated words--simple score	60	14-09	42
--weighted score	331	15-03	42
Auditory attention span for related words	71	10-06	41
Visual attention span for objects --simple score	61	16-09	42
--weighted score	339	17-03	42
Visual attention span for letters	7-2	13-09	41.5
Disarranged pictures	22	10-06	26

Frostig Developmental Test of Visual Perception

1968-1969 Evaluation (1)	Raw Score	Perceptual Age	Rank
Figure-ground discrimination	20	8-03	33
Form constancy	10	7-00	17.5
Position in space	7	7-00	22.5
Spatial relationships	5	6-06	10

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TABLE 36 (continued)

Frostig Developmental Test of Visual Perception			
1969-1970 Evaluation (2)	Raw Score	Perceptual Age	Rank
Figure-ground discrimination	20	8-03	32
Form constancy	10	7-00	18
Position in space	8	8-09	37
Spatial relationships	4	6-00	5
1969-1970 Evaluation (3)			
Figure-ground discrimination	19	8-03	13
Form constancy	15	9-00	25.5
Position in space	7	7-00	15
Spatial relationships	7	8-03	22.5

Bender Visual Motor Gestalt Test			
1968-1969 Evaluation (1)			
Reproductions from memory			
Satisfactory gestalts	1		23.5
Simplified gestalts	5		34.5
Fragmented gestalts	3		6.5
Reproductions from copying			
Satisfactory gestalts	2		19.5
Simplified gestalts	6		21
Fragmented gestalts	1		13.5
1969-1970 Evaluation (2)			
Reproductions from memory			
Satisfactory gestalts	2		25
Simplified gestalts	6		25
Fragmented gestalts	1		16
Reproductions from copying			
Satisfactory gestalts	1		9.5
Simplified gestalts	8		2.5
Fragmented gestalts	0		28.5

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TABLE 36 (continued)

Bender Visual Motor Gestalt Test		
1969-1970 Evaluation (3)	Raw Score	Rank
Reproductions from memory		
Satisfactory gestalts	3	29
Simplified gestalts	6	25
Fragmented gestalts	0	29.5
Reproductions from copying		
Satisfactory gestalts	3	24.5
Simplified gestalts	6	19
Fragmented gestalts	0	27
Murphy-Durrell Reading Readiness Analysis		
1968-1969 Evaluation (1)		
Capital letters	26	25.5
Lower-case letters	23	10.5
Phonemes		
Initial position	38	31.5
Final position	8	11.5
Total	46	18
1969-1970 Evaluation (2)		
Capital letters	26	26
Lower-case letters	26	30
Phonemes		
Initial position	38	30
Final position	10	32
Total	48	34
1969-1970 Evaluation (3)		
Capital letters	26	23
Lower-case letters	26	27.5
Phonemes		
Initial position	38	25.5
Final position	10	24.5
Total	48	27

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TABLE 36 (continued)

Durrell Analysis of Reading Difficulty	Raw Score	Rank
1968-1969 Evaluation (1)		
Capital letters	26	25
Lower-case letters	25	17.5
Blends	14	27
Primary visual memory	12	21.5
Intermediate visual memory		
Total words	1	DNR[a]
Total letters	54	20.5
Letters in sequence	52	22.5
Intrusion	4	33.5
Primary hearing sounds	21	14.5
Intermediate hearing sounds		
Total words	0	DNR
Total consonants	62	22.5
Total vowels	16	17.5
Sounds in sequence	77	19.5
Intrusion	7	34.5
Word recognition	22	21
Oral reading recall	15	25.5
Silent reading recall	16	28
Listening comprehension recall	25	39.5
1969-1970 Evaluation (2)		
Capital letters	26	25
Lower-case letters	26	29
Blends	16	37
Primary visual memory	18	38.5
Intermediate visual memory		
Total words	0	DNR
Total letters	65	24.5
Letters in sequence	56	22
Intrusion	5	31
Primary hearing sounds	26	24.5
Intermediate hearing sounds		
Total words	0	DNR
Total consonants	65	32
Total vowels	19	17.5

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TABLE 36 (continued)

Durrell Analysis of Reading Difficulty	Raw Score	Rank
Sounds in sequence	82	28
Intrusion	24	16
Word recognition	39	24.5
Oral reading recall	20	26
Silent reading recall	27	27.5
Listening comprehension recall	25	37.5
1969-1970 Evaluation (3)		
Capital letters	26	24
Lower-case letters	26	24.5
Blends	16	29.5
Primary visual memory	19	36.5
Intermediate visual memory		
Total words	7	DNR
Total letters	110	37
Letters in sequence	107	35.5
Intrusion	5	28
Primary hearing sounds	29	32.5
Intermediate hearing sounds		
Total words	3	DNR
Total consonants	73	35.5
Total vowels	33	29
Sounds in sequence	102	28
Intrusion	9	25
Oral reading recall	28	34.5
Silent reading recall	80	28.5
Listening comprehension recall	26	33
Word recognition	63	32

[a] DNR indicates that score was not ranked.

*These data are rank order positions of scores in learning profiles.

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EVALUATION I

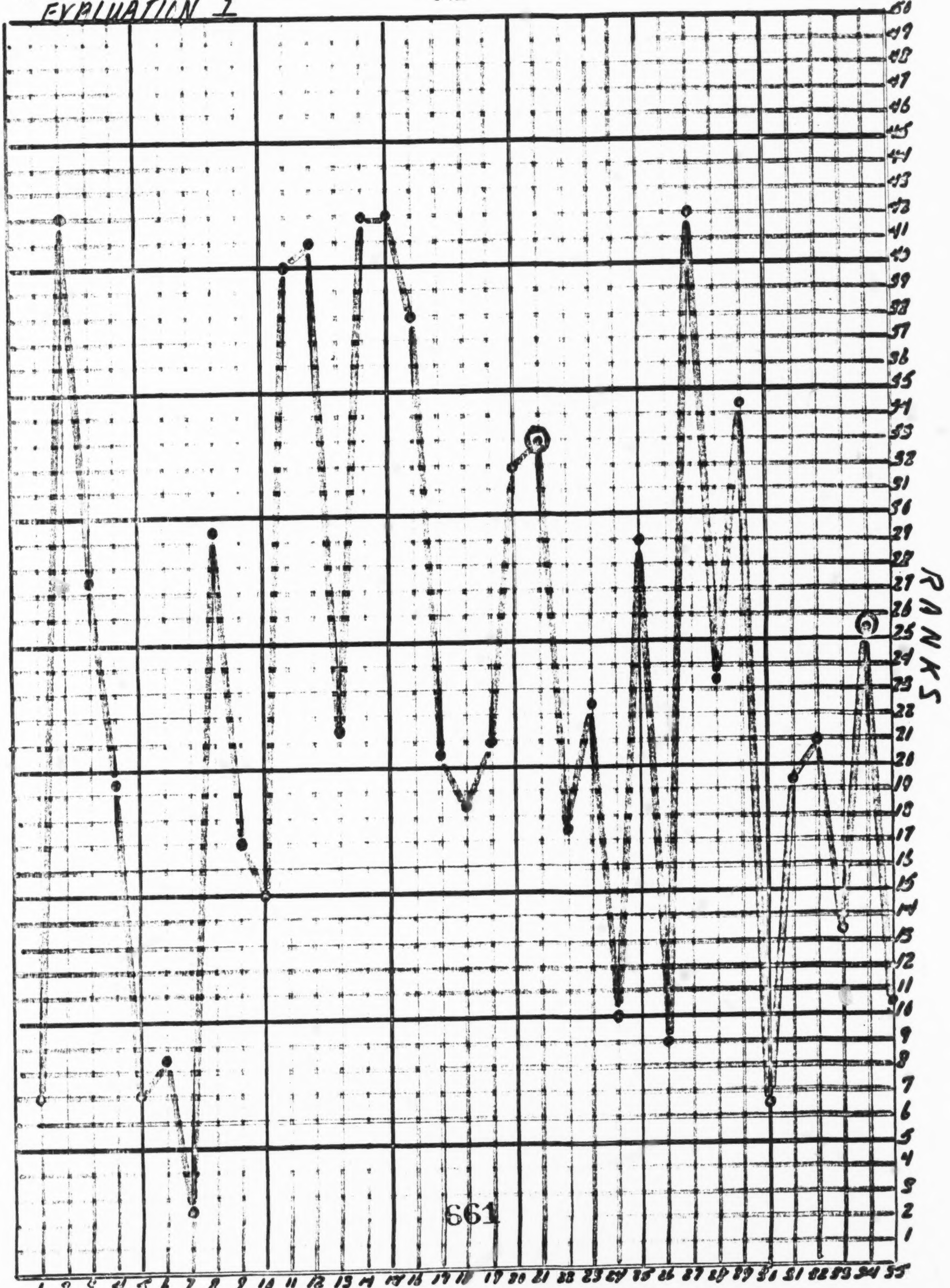


Fig. 15 CA. IQ. MA. and SUBTEST SCORES

EVALUATION I

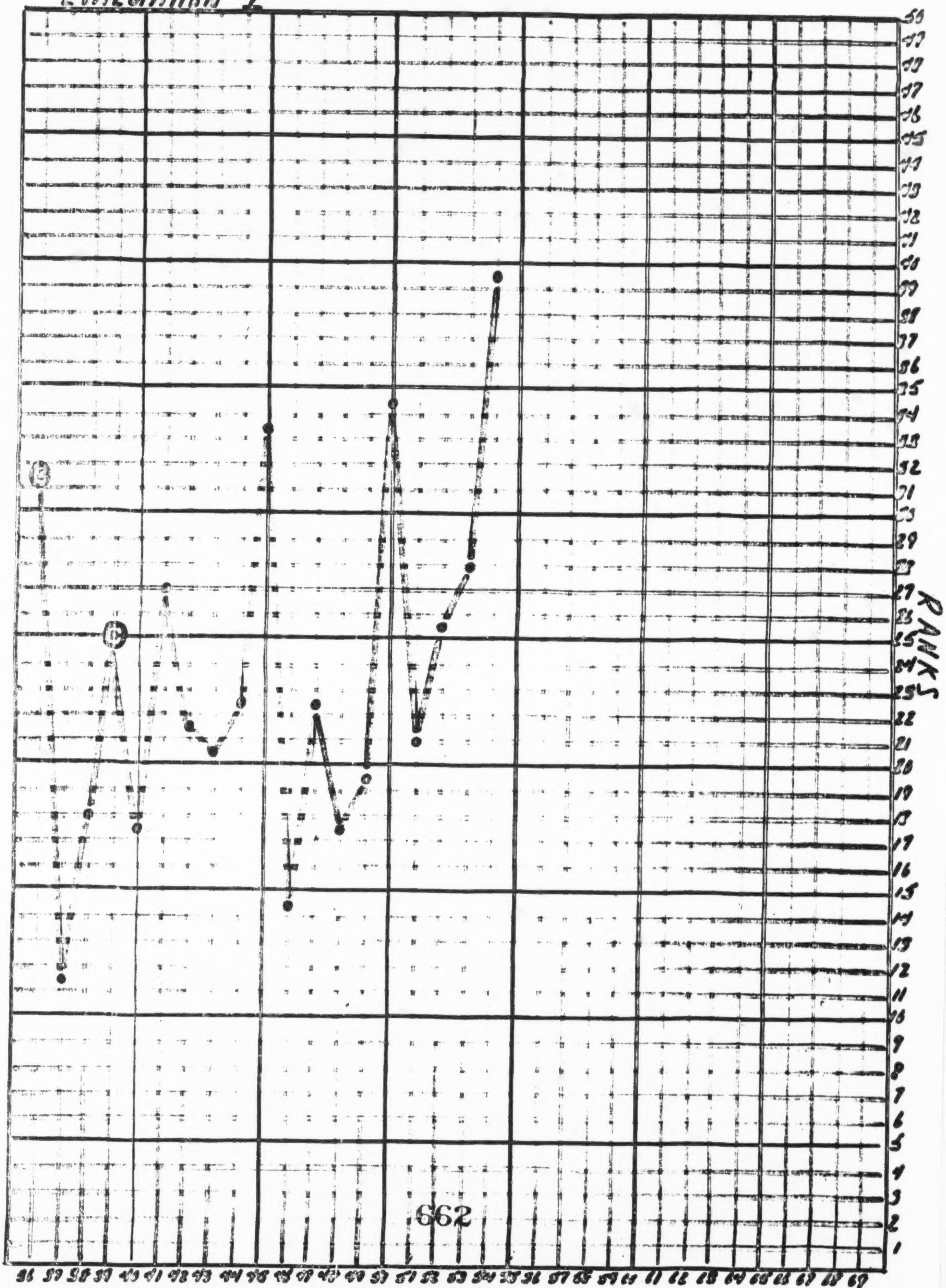


Fig. 15 CA. IQ. MA. and SUBTEST SCORES

EVALUATION II

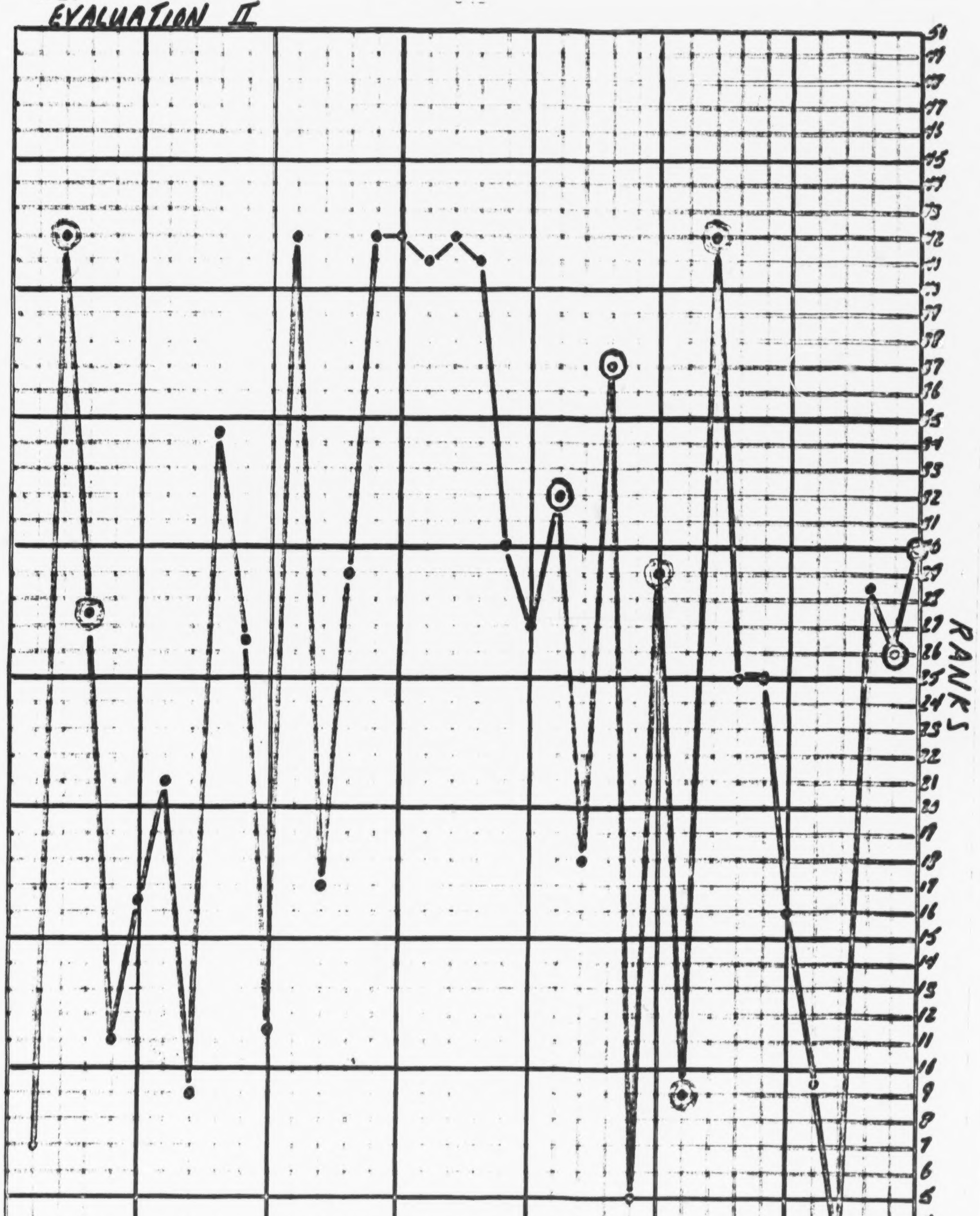


Fig. 16 CA. IQ. MA. and SUBTEST SCORES

EVALUATION II

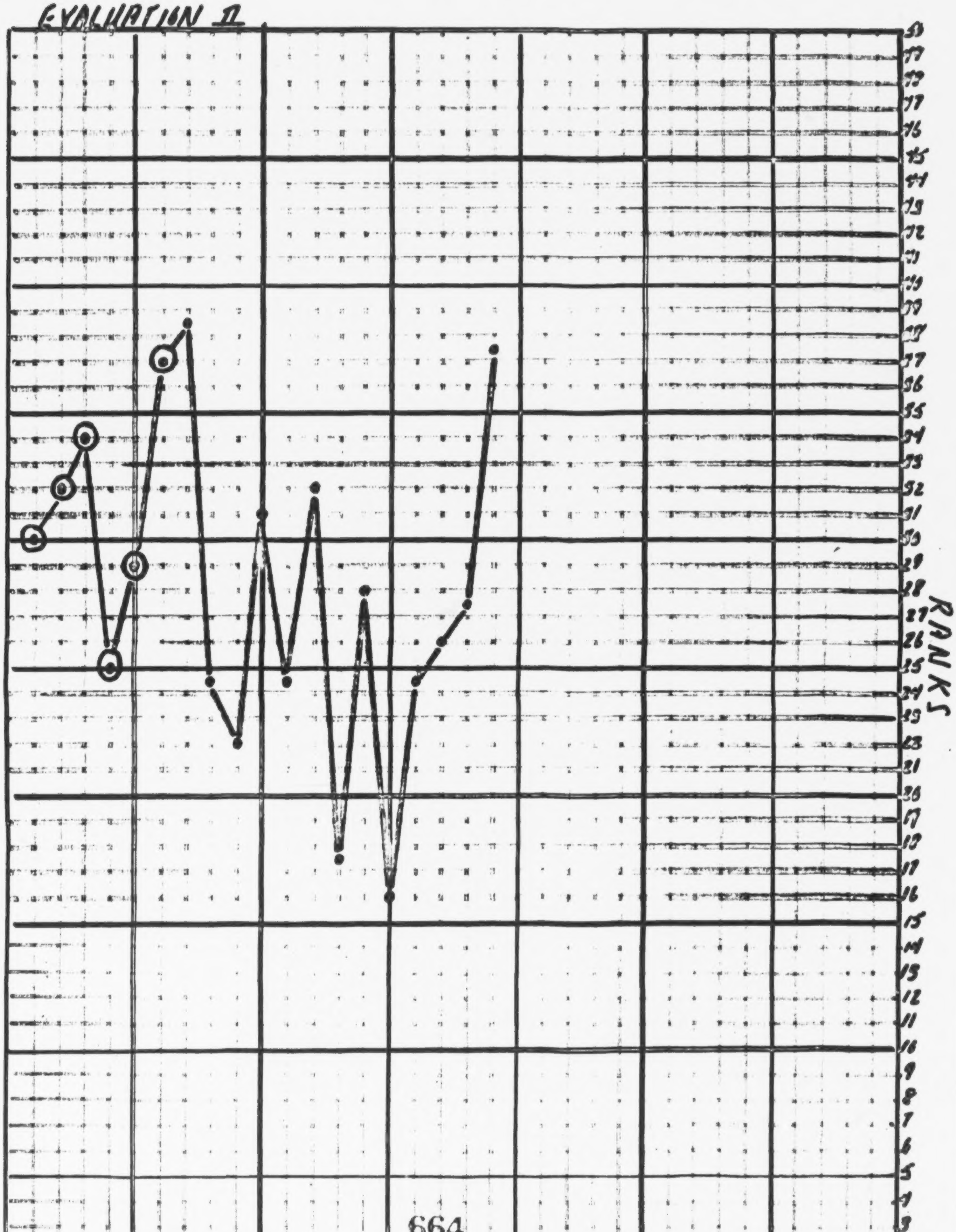


Fig. 16 CA. IQ. MA. and SUBTEST SCORES

EVALUATION III

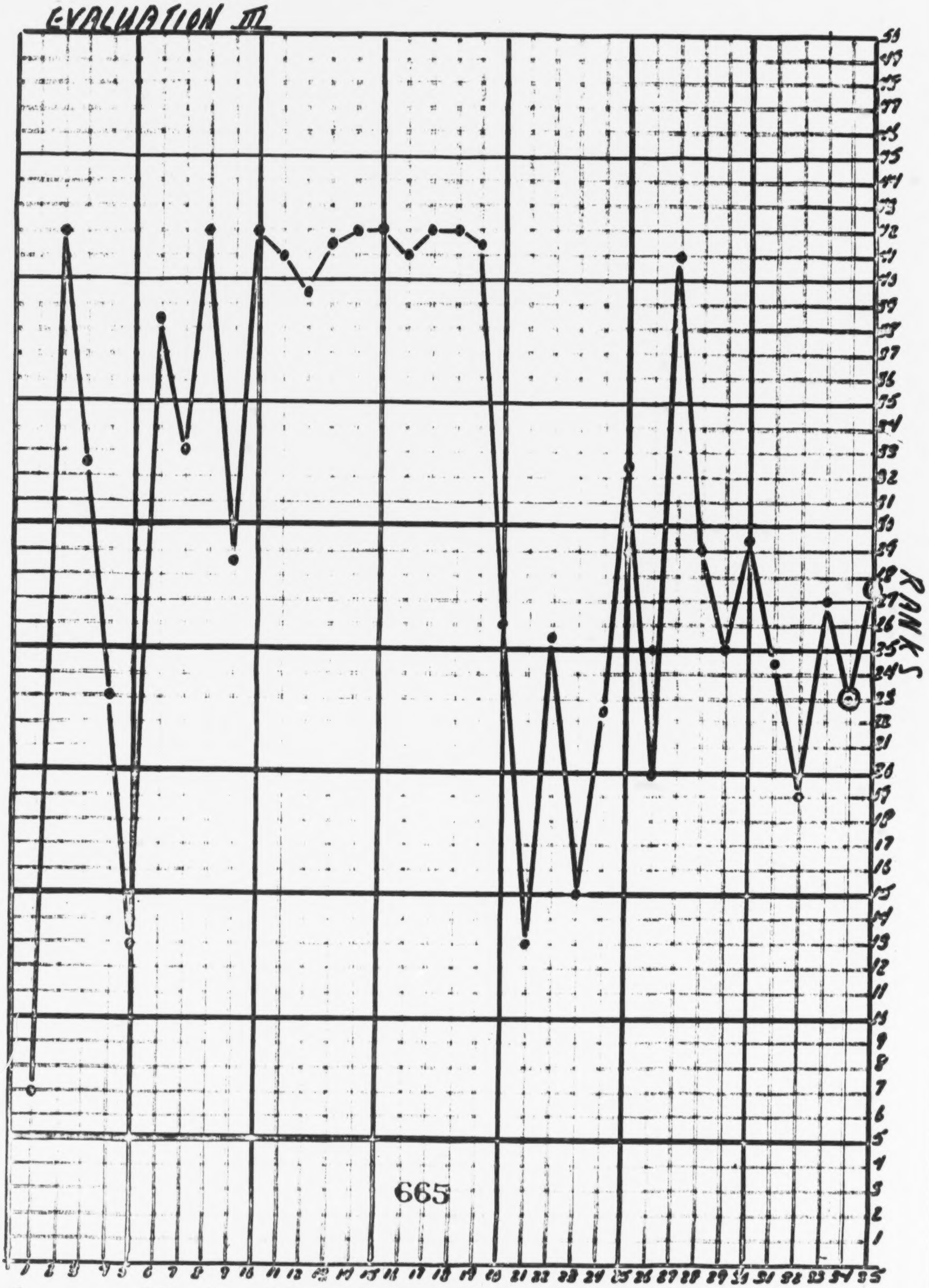


Fig. 17 CA. IQ. MA. and SUBTEST SCORES

EVALUATION #1

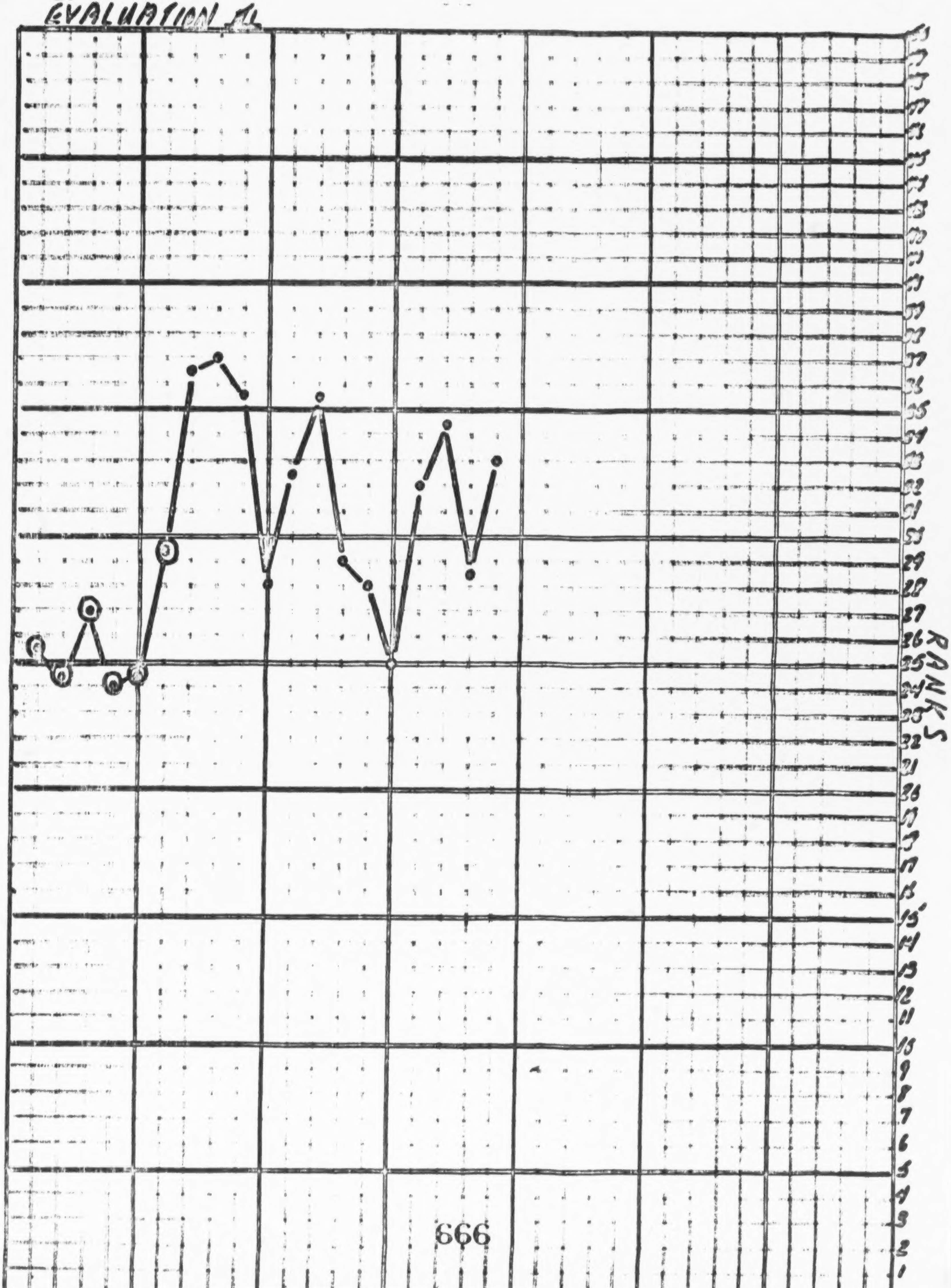


Fig. 17 CA. IQ. MA. and SUBTEST SCORES

2-11 years. Joey's achievements on the five Detroit Tests of Learning Aptitude revealed some variation, yet were quite congruent with findings on the ITPA on which he functioned on somewhat higher levels on auditory than on visual recall tasks. Performances on the Stanford-Binet administered the first year reflected similar distinctions in cognitive strength and weakness. Conceptual-language functions were consonant with his chronological age expectancies. Auditory memory recall of digits forward and reversed, sentences, and story details where he reached a ceiling of 12 years was conspicuously high. Yet his functioning on visuomotor tasks was impaired to a degree that he was unable to copy a diamond at a seven-year level; he attained a rank of nine in his achievement on tasks requiring such functions. Again, manifestations of these disabilities were evident in his performances on the Frostig Developmental Test of Visual Perception and the Bender Visual Motor Gestalt Test, where, in marked contrast to his performances on other visual memory tasks, his accomplishments were labored and reproduction latencies were excessively long. On the Murphy-Durrell Reading Readiness Analysis, he experienced some confusion among lower-case letters "d," "p," and "q" but showed no paramount difficulties with other tasks. On more primary subtests of the Durrell Analysis, such as Capital and Lower-case letter recall, Blends, and Primary hearing sounds, his performances disclosed no problems in accomplishment. Primary visual memory tasks were somewhat more difficult. Prominent strengths again were apparent in his recall of sounds of the intermediate subtest and Listening Comprehension. When Joey entered the second grade at the beginning of the second year of this study, he was reading on grade level but experiencing extreme difficulties with handwriting skills. These observations seemed to corroborate further reflections in clinical test data.

With few exceptions, Joey's performances on second and third evaluations revealed similar trends. Variations were observed on auditory memory recall on the second administrations of the Stanford-Binet where performance revealed a drop of 14 points, on the second evaluation Visual-motor sequential subtest, and third evaluation Auditory-vocal sequential tasks of the ITPA. All other subtests tapping abilities of prominent strength continued to reveal substantial gain. In fact, his performances on visual memory tasks on the Detroit Tests exceeded his achievements on auditory memory tasks. One possible source of explanation for these slight decreases in auditory memory performance was Joey's progressive hearing loss. During the second and third evaluations, he revealed increasing difficulties in distinguishing directionality of sound. His performances on Stanford-Binet visuo-motor tasks, the ITPA Visual-motor association subtest, Bender Gestalt designs, and Frostig tasks, as well as his handwriting, revealed varying degrees of improvement. However, his somewhat lower performances on such tasks seemed to indicate that his visuo-motor difficulties were by no means entirely remediated.

On the Murphy-Durrell Reading Readiness Analysis, Joey attained ceiling scores on all subtests both second and third evaluations. As is reflected in his performances on the Durrell Analysis during the two latter assessment sessions, he continued to progress substantially in his acquisition of reading skills and Oral and Silent reading comprehension.

The relative impact of cognitive and emotional characteristics on learning. Despite Joey's visuo-motor difficulties, he had many psychological strengths which contributed in consistent and highly positive ways to effective learning in most areas of academic endeavor. Among these were his emotional characteristics, the relative intactness of other learning abilities, and unusually high auditory and visual memory abilities. He approached learning tasks without intervening distractions and arrived at conclusions by means of direct and relatively efficient information-processing strategies. His reading, language, arithmetic, spelling, and over-all conceptual skills and abilities did not appear to be especially influenced by his disorders in visuo-motor functioning. Thus, he was able to experience a large measure of success in other academic achievements. His ability to tolerate specific focus on visuo-motor problems probably contributed to changes which were evident over the two-year period. Too, it was possible that such disorders were remediable to a greater extent than other types of disabilities which tended to have much more pervasive effects. Joey's learning problems seemed to be confined primarily to fine visuo-motor difficulties. Finally, it was an interesting and somewhat ironic situation that Joey, the most severely hearing impaired child in the study, manifested such predominant strengths in auditory abilities. The observation seemed to be a clear indication of findings cited by other writers that while sensory and neurological abilities are related, they are as well independent.

Case Study II: Child 42

In September 1968, Ricky, 9 years and 4 months, was transferred from a regular second grade class. He remained with teacher D during the first year and was placed in a more advanced special class with teacher D2 the second year. Data included in his cumulative record indicated that since his entrance into first grade in 1965, he had been a considerable concern among school personnel. Prior to the commencement of the study, he was given frequent intelligence tests which reflected a substantial degree of variation both across and within individual performances. These included the following results: April 1965, Binet IQ of 90; October 1965, Binet IQ of 86; November 1968, a Full Scale WISC IQ of 76. In March 1968 he was administered the Durrell Analysis of Reading Difficulty. Although his Oral reading, Silent reading, Listening comprehension, and word attack skills approximated second and third grade levels, he revealed evidence of confusion on some preprimer words. A speech evaluation in October 1967 reported that Ricky showed mildly defective articulation, frequent hesitations and repetitions of sounds and words, and difficulty in organizing thoughts into effective sentence groups. His speech sound discrimination was extremely poor, and he was very hyperactive.

Emotional behavior. Observations of Ricky's behavior during class and test sessions indicated that some of his emotional characteristics had severely detrimental effects on his interpersonal relationships and learning patterns. Although they changed considerably, these tendencies still remained predominant and were reflected in his performances the second year.

Ricky was an alert, quick-witted, interesting, and engaging child; yet his interpersonal relationships with his peers and teachers were charged with constant overreaction; low tolerances, quick judgments, and frequent accusations; need for constant self-assertion and reinforcement, and perpetual fantasy. Although he revealed countless indications of needs and desires for close relationships, until the second year he seemed largely unable to reach beyond the barriers of his defenses to allow himself to express or accept genuine affection. Frequent tears the first year more often seemed to be manifestations of his anger and attempts to gain attention than a deeply felt concern for others or a result of physical pain which he himself suffered. Often, periods of crying when he was hurt in playing with other children were extended to 10- or 15-minute durations. The superficiality of his relationships and dissociation from other people seemed to be symbolically exemplified in the observation that Ricky often addressed adults, including his first-year teacher, as "Ma'am." Thus, throughout the first year, his behavior, revealing evidence of little change, continued to vacillate between moments of extreme excitement and enthusiasm and more coherent interactions, and frequent depressions and emotional outbursts.

Over the course of the second year, more severe manifestations gave way to calmer and less frequent disturbances, where he was able to monitor his own behavior more appropriately. Fantasies of family visits, trips, and personal possessions began to diminish. He became somewhat more tolerant of other people, less often overreacting to his peers and only rarely countering requests of his teacher, who seemed to be an extremely important, stabilizing influence in effecting positive changes.

Ricky's emotional behavior not only impaired interpersonal relationships. It appeared to have aversive effects on his abilities to attend consistently to learning tasks. He was easily distracted by events and people of his immediate surroundings. He found it difficult to remain with particular tasks for more than 10-minute periods. If he was unable to accomplish requirements with minimal effort, he dissolved into tears and turned to his teachers for immediate assistance, with little desire to reattempt the forsaken tasks. He exhibited extremely low levels of tolerance for attending to learning tasks which focused heavily on most severely impaired learning functions. Moreover, he impulsively rushed through tasks which he did not care to complete; this behavior accounts in part for the somewhat erratic performances across clinical tests and in class. Again, these tendencies diminished to an extent the second year; yet they still remained prominent to a degree that they introduced a large measure of inconsistency into third evaluation test results.

Characteristics of cognitive behavior. Although he attained a Binet IQ of 96 on both first and third evaluations, Ricky's cognitive performances appeared to be characterized by multiple impairments in various aspects of auditory and, to a slightly lesser degree, visuo-motor functioning. Paramount strengths were consistently revealed in his conceptual abilities across the three evaluations on conceptual-language tasks of the Stanford-Binet, his high levels of comprehension and gains in achievement on Oral and Silent reading and Listening comprehension tasks, and high levels of reasoning abilities observed during his class participation. In contrast to some other children who also suffered from severe auditory disabilities, Ricky was able to acquire, retain, and utilize reading skills with considerable facility. His learning problems were more obviously reflected in his auditory-sequencing and expressive language abilities, his extreme difficulty in recall of fundamental arithmetic factors, and some minor variations in his formation and spacing of letters in handwriting. Moreover, it is apparent in Table 37 of clinical data and the learning profiles of Figures 18, 19, and 20 that another dimension of Ricky's learning disorders was manifested in the tremendous inconsistency in his levels of performance on academic tasks.

Although levels of functioning are not entirely consonant, Ricky's performances on first-year clinical tests fairly clearly indicated areas where he experienced most severe difficulties. On the Illinois Test of Psycholinguistic Abilities, he revealed some problems in recalling four digits and was unable to re-auditorize five numbers in correct sequence. Similarly, on the Stanford-Binet, he was unable to recall five digits at a seven-year

TABLE 37

CASE STUDY DATA: PERFORMANCES OF CHILD 42 ON SEVEN CLINICAL TESTS OVER A TWO-YEAR PERIOD

Child: 42

Date of Birth: 4/21/59

Teacher: D, D2

Chronological age (September, 1968): 9-04 Years

Stanford-Binet

1968-1969 Evaluation (1)	Score	Rank
IQ	96	40
Mental age	9-06	38
Conceptual-language functions	146	40
Visuo-motor functions	48	37.5
Auditory memory functions	18	26
1969-1970 Evaluation (3)		
IQ	96	40
Mental age	10-10	40
Conceptual-language functions	254	42
Visuo-motor functions	38	24
Auditory memory functions	24	32

Illinois Test of Psycholinguistic Abilities

1968-1969 Evaluation (1)	Raw Score	Language Age	Rank
Auditory decoding	31	8-10+	42
Visual decoding	20	8-09+	40
Auditory-vocal association	17	6-01	17.5
Visual-motor association	18	7-02	26
Vocal encoding	13	5-04	11.5
Motor encoding	19	8-09+	39.5
Auditory-vocal automatic	16	7-07	33.5
Auditory-vocal sequential	16	4-07	13.5
Visual-motor sequential	12	5-04	28.5
Total	162	6-09	33.5

(continued on next page)

TABLE 37 (continued)

Illinois Test of Psycholinguistic Abilities	Raw Score	Language Age	Rank
1969-1970 Evaluation (2)			
Auditory decoding	33	8-10+	40.5
Visual decoding	23	8-09+	41.5
Auditory-vocal association	19	6-10	17.5
Visual-motor association	18	7-02	19
Vocal encoding	14	5-08	11
Motor encoding	26	8-08+	41.5
Auditory-vocal automatic	18	8-04	35.5
Auditory-vocal sequential	22	6-03	24.5
Visual-motor sequential	14	6-00	17
Total	187	8-01	36.5
1969-1970 Evaluation (3)			
Auditory decoding	34	8-10+	38
Visual decoding	20	8-09+	27.5
Auditory-vocal association	21	7-08	20
Visual-motor association	25	9-03+	37.5
Vocal encoding	23	8-11+	20
Motor encoding	21	8-08+	28.5
Auditory-vocal automatic	20	9-01	34
Auditory-vocal sequential	21	5-11	19.5
Visual-motor sequential	17	7-04	24.5
Total	202	9-04+	28.5

Detroit Tests of Learning Aptitude	Raw Score	Mental Age	Rank
1968-1969 Evaluation (1)			
Auditory attention span for unrelated words--simple score	24	-3-00	3
--weighted score	91	-3-00	2
Auditory attention span for related words	34	4-09	14.5
Visual attention span for objects --simple score	34	6-09	15
--weighted score	157	5-06	10.5

(continued on next page)

TABLE 37 (continued)

Detroit Tests of Learning Aptitude	Raw Score	Mental Age	Rank
Visual attention span for letters	4-4	8-09	25
Disarranged pictures	25	11-03	40.5
1969-1970 Evaluation (2)			
Auditory attention span for unrelated words--simple score	30	3-09	2
--weighted score	137	3-00	2
Auditory attention span for related words	34	4-09	13
Visual attention span for objects --simple score	34	6-09	12
--weighted score	164	6-00	10.5
Visual attention span for letters	5-1	9-00	30
Disarranged pictures	2	5-09	3
1969-1970 Evaluation (3)			
Auditory attention span for unrelated words--simple score	39	6-03	9.5
--weighted score	198	6-03	12
Auditory attention span for related words	34	4-09	6
Visual attention span for objects --simple score	50	11-09	25
--weighted score	266	12-03	25
Visual attention span for letters	5-1	9-00	19
Disarranged pictures	17	9-03	16

Frostig Developmental Test of Visual Perception	Raw Score	Perceptual Age	Rank
1968-1969 Evaluation (1)			
Figure-ground discrimination	20	8-03	33
Form constancy	9	6-09	14
Position in space	8	8-09	36.5
Spatial relationships	6	7-06	17

(continued on next page)

TABLE 37 (continued)

Frostig Developmental Test of Visual Perception			
1969-1970 Evaluation (2)	Raw Score	Perceptual Age	Rank
Figure-ground discrimination	20	8-03	32
Form constancy	10	7-00	18
Position in space	7	7-00	21.5
Spatial relationships	6	7-06	16.5
1969-1970 Evaluation (3)			
Figure-ground discrimination	20	8-03	30.5
Form constancy	17	9-00	40.5
Position in space	6	6-03	5.5
Spatial relationships	6	7-06	11
Bender Visual Motor Gestalt Test			
1968-1969 Evaluation (1)			
Reproductions from memory			
Satisfactory gestalts	1		23.5
Simplified gestalts	7		19
Fragmented gestalts	1		16.5
Reproductions from copying			
Satisfactory gestalts	2		19.5
Simplified gestalts	6		21
Fragmented gestalts	1		13.5
1969-1970 Evaluation (2)			
Reproductions from memory			
Satisfactory gestalts	2		25
Simplified gestalts	6		25
Fragmented gestalts	1		16
Reproductions from copying			
Satisfactory gestalts	2		18.5
Simplified gestalts	6		21.5
Fragmented gestalts	1		11.5

(continued on next page)

TABLE 37 (continued)

Bender Visual Motor Gestalt Test		
1969-1970 Evaluation (3)	Raw Score	Rank
Reproductions from memory		
Satisfactory gestalts	3	29
Simplified gestalts	5	32.5
Fragmented gestalts	1	11.5
Reproductions from copying		
Satisfactory gestalts	2	18.5
Simplified gestalts	6	19
Fragmented gestalts	1	9

Murphy-Durrell Reading Readiness Analysis		
1968-1969 Evaluation (1)		
Capital letters	26	25.5
Lower-case letters	26	32
Phonemes		
Initial position	38	31.5
Final position	10	32.5
Total	48	35
1969-1970 Evaluation (2)		
Capital letters	26	26
Lower-case letters	26	30
Phonemes		
Initial position	38	30
Final position	10	32
Total	48	34
1969-1970 Evaluation (3)		
Capital letters	26	23
Lower-case letters	26	27.5
Phonemes		
Initial position	38	25.5
Final position	10	24.5
Total	48	27

(continued on next page)

TABLE 37 (continued)

Durrell Analysis of Reading Difficulty	Raw Score	Rank
1968-1969 Evaluation (1)		
Capital letters	26	25
Lower-case letters	26	31.5
Blends	13	24.5
Primary visual memory	14	31
Intermediate visual memory		
Total words	0	DNR
Total letters	73	31.5
Letters in sequence	69	33
Intrusion	41	7
Primary hearing sounds	23	18
Intermediate hearing sounds		
Total words	6	DNR
Total consonants	72	38
Total vowels	34	38.5
Sounds in sequence	104	39
Intrusion	10	29.5
Word recognition	49	35.5
Oral reading recall	22	38.5
Silent reading recall	85	39
Listening comprehension recall	21	27
1969-1970 Evaluation (2)		
Capital letters	26	25
Lower-case letters	26	29
Blends	15	27.5
Primary visual memory	15	26.5
Intermediate visual memory		
Total words	0	DNR
Total letters	78	31.5
Letters in sequence	70	31
Intrusion	11	21.5
Primary hearing sounds	27	29
Intermediate hearing sounds		
Total words	1	DNR
Total consonants	60	24.5

(continued on next page)

TABLE 37 (continued)

Durrell Analysis of Reading Difficulty

	Raw Score	Rank
Total vowels	26	31
Sounds in sequence	77	23
Intrusion	21	18
Word recognition	66	36
Oral reading recall	31	40
Silent reading recall	91	40
Listening comprehension recall	34	41
1969-1970 Evaluation (3)		
Capital letters	26	24
Lower-case letters	26	24.5
Blends	16	29.5
Primary visual memory	19	36.5
Intermediate visual memory		
Total words	6	DNR
Total letters	106	32
Letters in sequence	102	33
Intrusion	8	20
Primary hearing sounds	29	32.5
Intermediate hearing sounds		
Total words	5	DNR
Total consonants	71	29.5
Total vowels	33	29
Sounds in sequence	103	29
Intrusion	13	18
Oral reading recall	37	41
Silent reading recall	121	42
Listening comprehension recall	38	40.5
Word recognition	76	37

42
EVALUATION 1

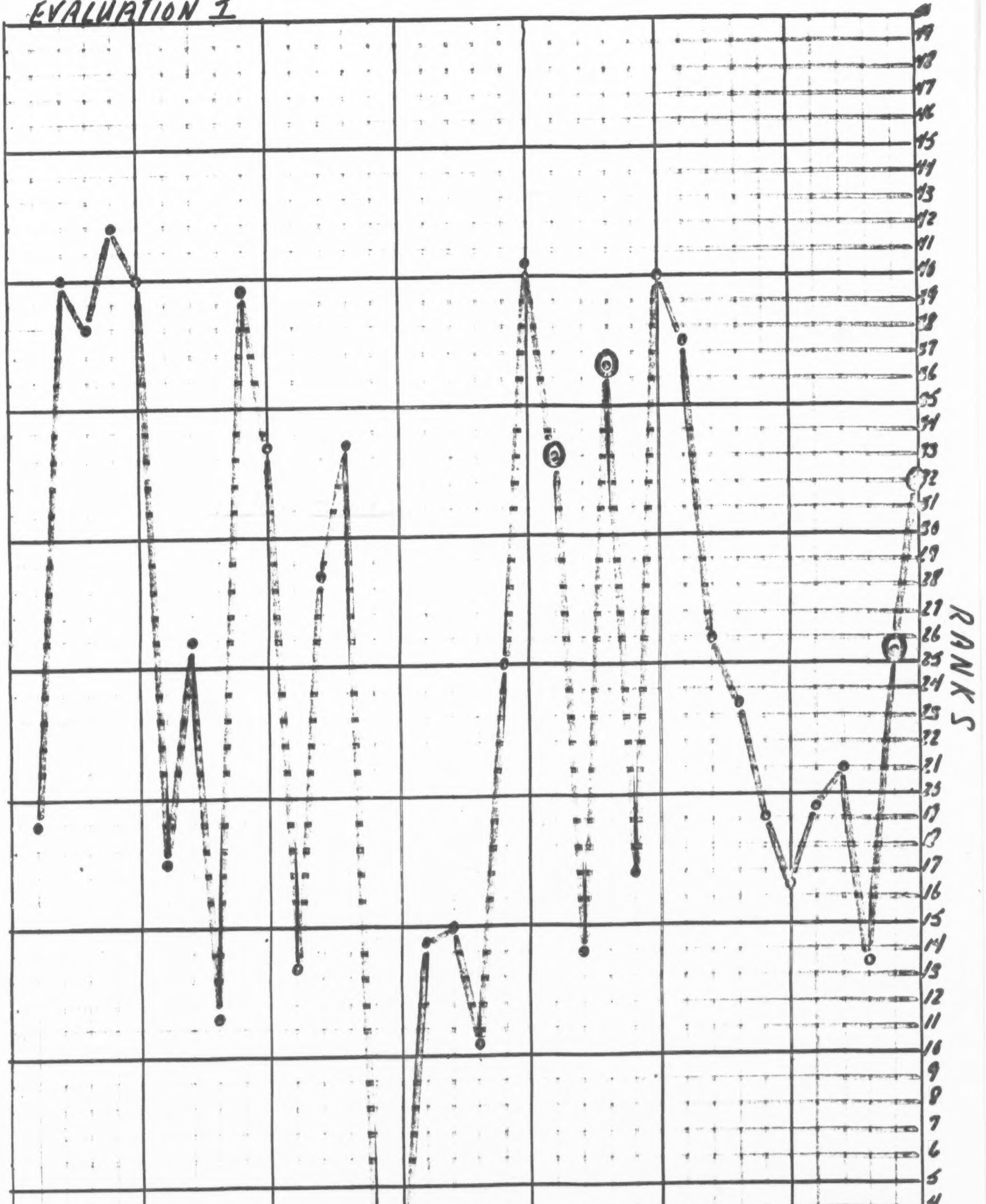


Fig. 19

EVALUATION I

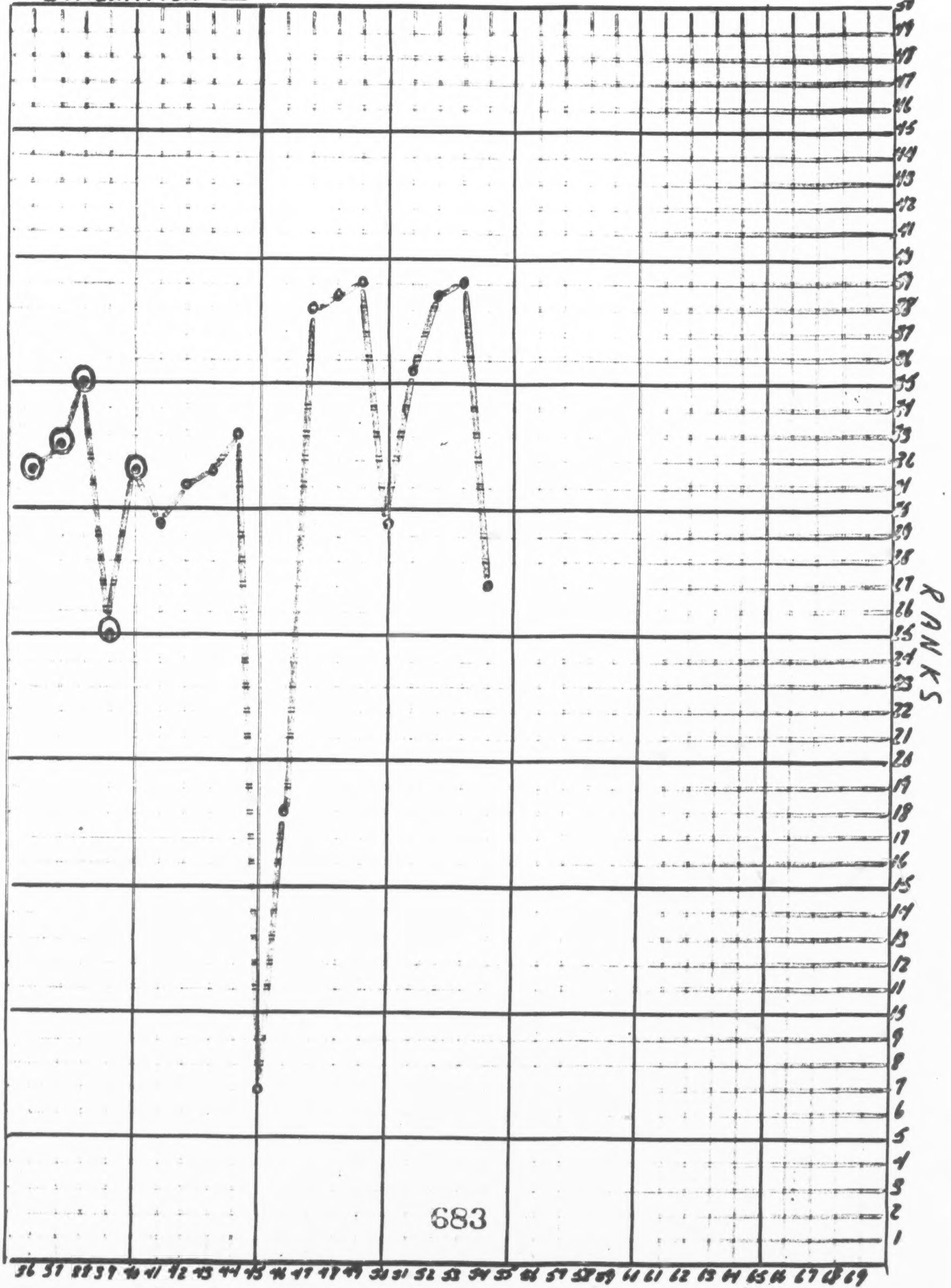
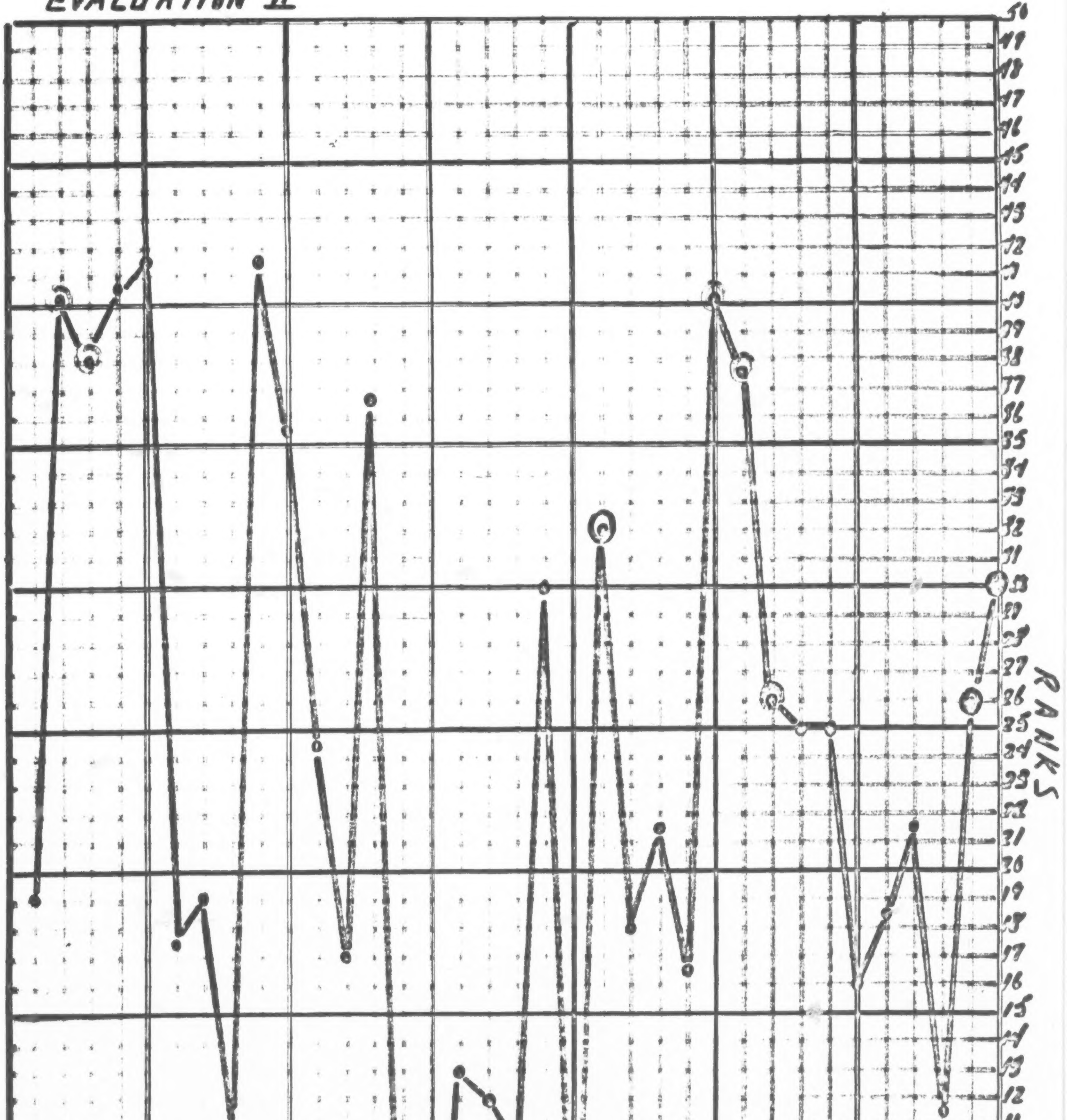


Fig. 18 CA. IQ. MA. and SUBTEST SCORES

EVALUATION II



CA. IQ. MA. and SUBTEST SCORES

Fig. 10

EVALUATION II

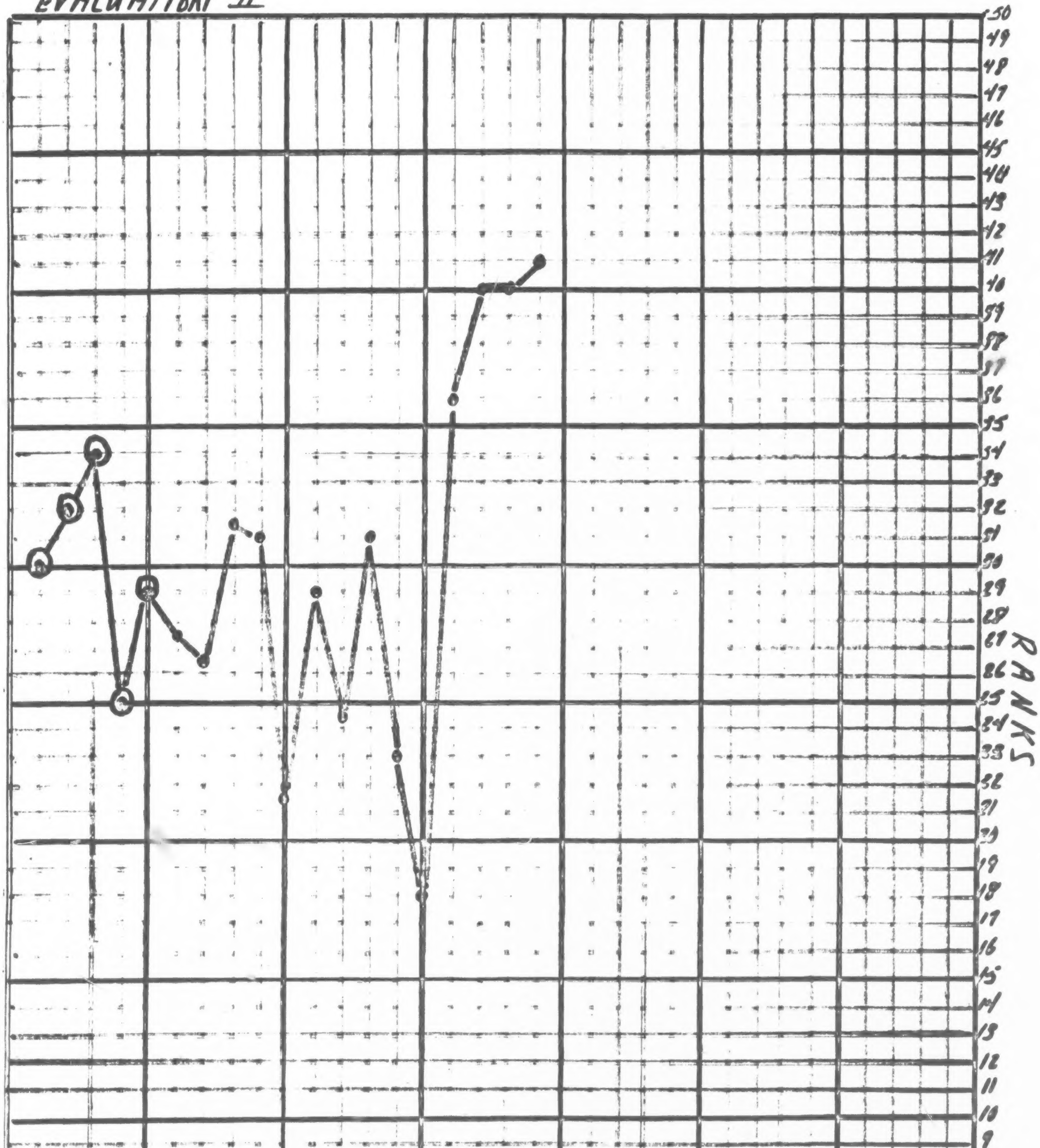


Fig. 19 C.A. I.Q. M.A. and SUBTEST SCORES

EVALUATION III

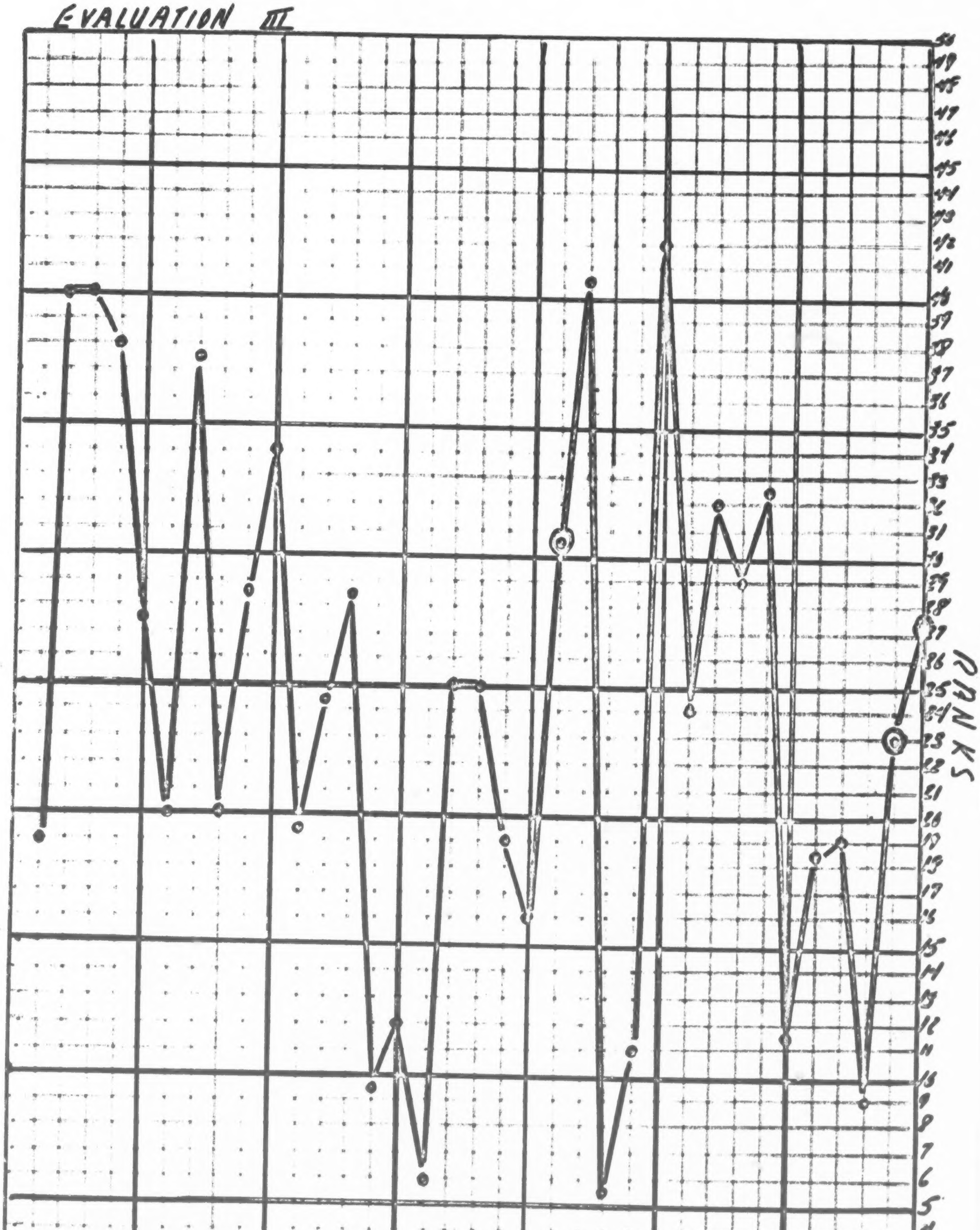


Fig. 20 CA. IQ. MA. and SUBTEST SCORES

EVALUATION III

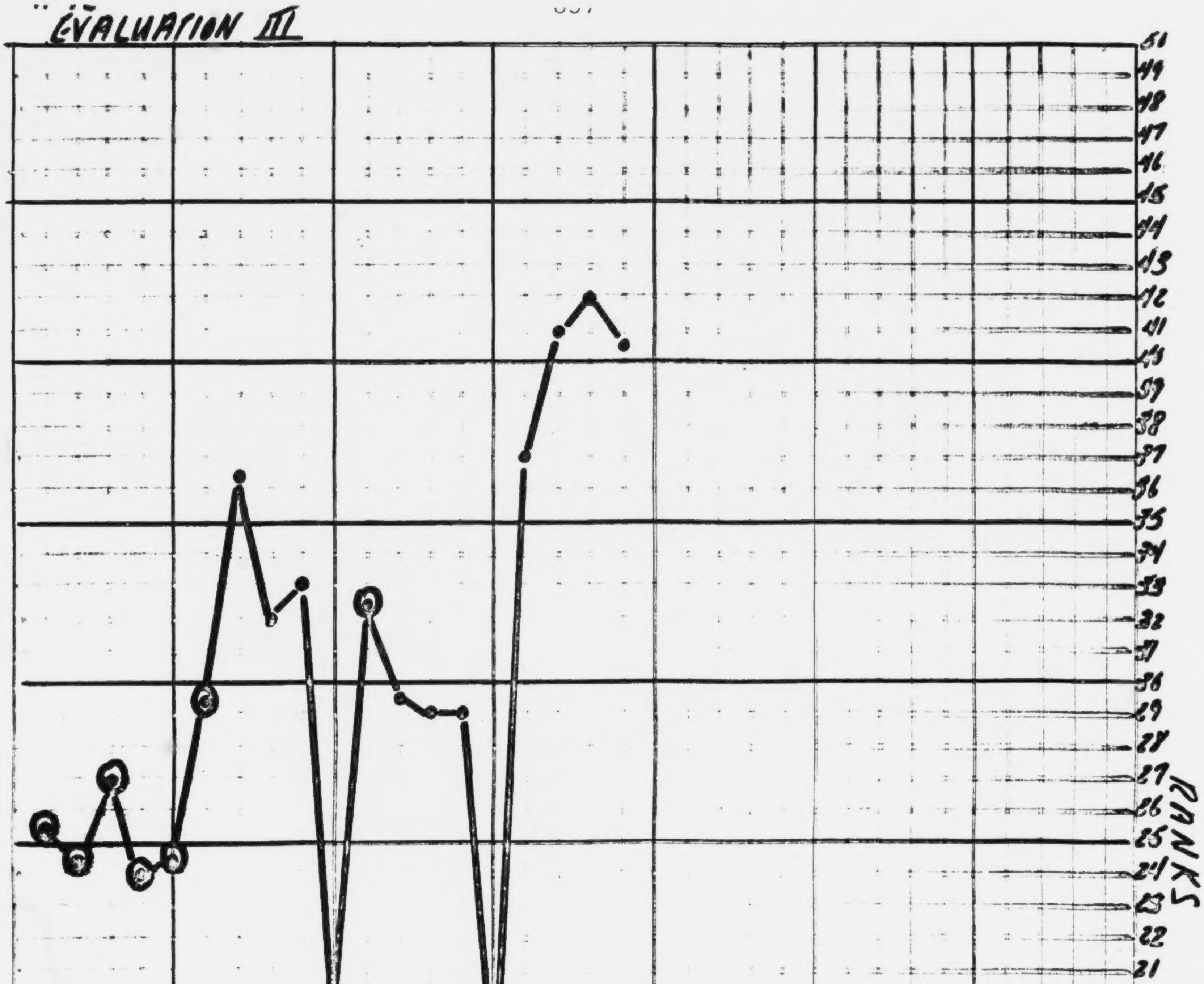


Fig. 20 CA. 16. MA. and SUBTEST SCORES

level or reverse five numbers at nine years. He had considerable difficulty in accomplishing verbal analogies on the ITPA; and although he was able to complete such tasks at a seven-year level on the Stanford-Binet, his lower performance persisted on the second ITPA evaluation. Ricky's excessively low ranks and mental age equivalents on the Detroit Tests reflect the degrees of difficulty that he experienced in sequencing unrelated words and sentences. He was able to conceptualize essential meaning but could not recall word-by-word sequences of sentences. His low performance on the Visual attention span for objects subtest seemed to corroborate findings on the ITPA that he was unable to remember in specified sequences certain kinds of visual information. His memory for letters was more intact; such abilities assumedly would be related to a greater extent to development of reading skills. Ricky's visuo-motor difficulties were reflected in his lower performances on the Frostig Developmental Test of Visual Perception, Bender Visual Motor Gestalt Test, and his accomplishments on such tasks on the Stanford-Binet as memory-for-designs. In addition to his difficulties in recalling fundamental facts, it was possible that Ricky's visuo-motor disorders were also reflected in certain aspects of his arithmetic performances and conceptualizations such as time, distance, and space.

His first-year performances on the Murphy-Durrell Reading

Readiness Analysis and Durrell Analysis were a marked contrast to many of his accomplishments on other subtests. Although he displayed somewhat lower performances on the Primary visual memory subtest, he consistently functioned at levels commensurate with or exceeding chronological age expectancies.

Ricky's performances on second and third evaluations revealed varying degrees of change and fluctutation in positive and negative directions; however, in the main, similar patterns of cognitive strength and weakness were still evident. On the ITPA, his performances remained lowest on Auditory-vocal association, Auditory-vocal sequential, and Visual-motor sequential subtests, with greatest difficulty still manifested on recall-of-digits tasks. On the Stanford-Binet, his performances showed some change in ability to sequence, but this was minimal. In comparison with the first year, his accomplishments on the Detroit Tests showed some gain on auditory attention span tasks, higher performances in visual attention span recall of objects, rather stable levels of functioning in his recall of letters, and wide fluctuations on the Disarranged pictures subtest. While his performances on the Form constancy subtest of the Frostig improved considerably, scores on Position in space and Spatial relationships subtests consistently dropped. Gains on the Bender Gestalt Test were minimal; his functioning on Stanford-Binet visuo-motor tasks remained about the same, with a slight decrease in score.

Ricky's performances on the Murphy-Durrell remained at ceiling levels on both second and third evaluations. Although his performances on the Intermediate hearing sounds subtest of the Durrell Analysis dropped slightly on the second evaluation, he gained in achievement on the third evaluation. All other aspects of his performance on this battery continued to change to a substantial degree, so that at the termination of the study Ricky's Oral and Silent reading and Listening comprehension approached a fifth grade level.

The relative impact of cognitive and emotional characteristics on learning. Ricky's emotional and cognitive disorders appeared to have specific bearing on his consistency and levels of frustration in learning and, to varying degrees, on his facility in acquiring arithmetic, handwriting, and certain expressive language abilities. He had major strengths in his high levels of language comprehension and diverse abilities to conceptualize in academic problem-solving situations; these characteristics were clearly reflected in his performance and growth patterns on the Stanford-Binet and rapid attainment of reading skills.

Over the two years of the study his achievement on auditory-vocal and sequential tasks changed only to a minimal degree on clinical tests; classroom observations seemed to substantiate these findings. Although Ricky's performances on visuo-motor tasks on the clinical tests revealed varied changes in both positive and negative directions, his handwriting considerably improved. To a greater degree, these wide fluctuations may have reflected the impact of emotional overlay rather than actual differences or regressions in cognitive abilities. The relative stability of his achievement on tasks tapping specific learning disabilities, in part, probably was a function of the degree of severity of these impairments, especially with respect to auditory disorders. Too, his hyperactivity, frequent inability to attend to tasks, high levels of anxiety and impulsivity, and low levels of tolerance also were conceived as substantially influencing change in his performances on tasks which were less easily accomplished.

Although similar characteristics of emotional behavior at times affected his performances on oral and written language and conceptual tasks, his attitudes toward involvement in such processes were somewhat different. Since these academic endeavors focused more primarily on cognitive functions of greater strength, he became less easily frustrated and engaged in activities with greater care and receptivity. Thus, it was not surprising that on the third evaluation Stanford-Binet results he was able to accomplish successfully such tasks as reconciliation of opposites, verbal absurdities, and abstract words at 12-, 13-, and 14-year levels. Moreover, his reading skills continued to show substantial gain so that he consistently maintained very high ranks in his learning profile on Oral and Silent reading and Listening comprehension recall.

Case Study III: Child 48

At the beginning of the study Caroline, 8 years and 11 months, had already attended special class two years. In September 1966 she was placed in class D from kindergarten. Including the duration of this investigation, she remained with teacher D for four years. Her cumulative school record reported that she suffered from cerebral palsy with accompanying speech and voice disorders. Her gross motor coordination was adequate but fine motor coordination was extremely poor. In October 1965 she was given the Peabody Picture Vocabulary Test and obtained an IQ of 69; on the Harris-Goodenough Draw-a-Man Test, administered at the same time, she achieved an IQ of 77. Over a two-year period, she was involved in reading and exercise programs at the Institutes for the Achievement of Human Potential in Philadelphia, Pennsylvania.

Emotional behavior. Among very severe multiple impairments, Caroline's emotional and social behavior contributed to her labored acquisition of knowledge and problems in development of interpersonal relationships. In relation to her chronological age, her behavior was quite immature: She was very dependent on adults, tended to relate exclusively to youngest children in her class, exhibited little impulse control, and readily dissolved into tears whenever class events or other persons countered her desires.

Her behavior was not characterized by the severe pathology which distinguished Ricky's affective disorders; yet she also displayed symptoms of extreme hyperactivity, distractibility, inattentiveness, and low levels of frustration. These manifestations, however, more generally characterized total patterns of her affective behavior than such symptoms in Ricky's behavior which seemed to be more predominant when he experienced particular difficulty in accomplishing specific tasks. Occasions were rare when these manifestations were not largely evident in her behavior. Such patterns of emotional behavior seemed to be not only severely detrimental to the consistency and her degrees of learning, but probably substantially altered ways in which information was processed. Too, such characteristics appeared to be very slow to change. In the two years, she became somewhat more competent in functioning independently; yet her ability to attend to learning tasks still was markedly disturbed. In class and test sessions she found it difficult to sit quietly for more than five minutes. She required much more time and a greater number of test sessions for completion of clinical tests than the majority of children in the study. Undoubtedly, the amount of energy and effort which was required for her accomplishment of tasks was closely related to the observation that she was unable to involve herself in learning situations without frequent periods of tension release and that she tired very easily. Thus, in these respects it was apparent not only that cognitive functions were affected by her emotional characteristics but also that physical, neurological, and cognitive factors had a multiple impact on her emotional behavior.

Characteristics of cognitive behavior. It is evident from Caroline's performances that she consistently experienced learning difficulties across all intellectual functions. These multiple cognitive impairments were reflected in her low achievements on the Stanford-Binet. On the 1968-1969 evaluation, she obtained an IQ of 59; on the 1969-1970 evaluation, she achieved an IQ of 68. They were strongly substantiated in class observations of her severe difficulty in acquiring knowledge and adaptive behavior along many dimensions of learning and of especially severe speech and language disorders. These characteristics also were evident across most of the clinical tests.

As well as revealing these severe and multiple impairments, examination of her patterns of performance and change presented in Table 38 and learning profiles of Figures 21, 22, and 23 also disclosed other important findings.

(a) Although most of Caroline's performances were not commensurate with expectancies for her chronological age, they were variable and thus reflected different degrees of impairment.

(b) Over the two years, some intellectual functions moved substantially in a positive direction so that a number of subtest performances were commensurate with her third evaluation mental age of 7-02 years. In addition, her patterns of change seemed to correspond closely with observations of much less impaired children; i.e., intellectual functions of greater strength showed greater gain than more severely impaired functions. Although indications of greater strength were not entirely consistent across subtests, it appeared that her performance and gains on visual and visuo-motor tasks were consonant with her mental age level to a greater degree than her accomplishments on tasks requiring expressive language and auditory discrimination and memory abilities.

(c) Finally, one of Caroline's most unique characteristics of cognitive functioning was evidenced in her patterns of performance on the Murphy-Durrell and Durrell Analysis Tests. On the basis of her lower levels of functioning across numerous measures,

TABLE 38

CASE STUDY DATA: PERFORMANCES OF CHILD 48 ON SEVEN CLINICAL TESTS OVER A TWO-YEAR PERIOD

Child: 48

Date of Birth: 9/30/59

Teacher: D

Chronological age (September, 1968): 8-11 Years

Stanford-Binet

1968-1969 Evaluation (1)	Score	Rank
IQ	59	1
Mental age	5-08	3
Conceptual-language functions	18	3
Visuo-motor functions	8	2
Auditory memory functions	0	4
1969-1970 Evaluation (3)		
IQ	68	7.5
Mental age	7-02	4
Conceptual-language functions	54	4.5
Visuo-motor functions	12	4
Auditory memory functions	8	11.5

Illinois Test of Psycholinguistic Abilities

1968-1969 Evaluation (1)	Raw Score	Language Age	Rank
Auditory decoding	18	5-02	14
Visual decoding	18	8-09+	36
Auditory-vocal association	13	4-11	4.5
Visual-motor association	8	3-08	4.5
Vocal encoding	11	4-09	7
Motor encoding	11	4-07	7
Auditory-vocal automatic	10	5-04	6
Auditory-vocal sequential	13	3-11	4.5
Visual-motor sequential	9	4-07	7.5
Total	111	5-00	2

(continued on next page)

TABLE 38 (continued)

Illinois Test of Psycholinguistic Abilities

1969-1970 Evaluation (2)	Raw Score	Language Age	Rank
Auditory decoding	23	6-05	8.5
Visual decoding	12	5-10	1.5
Auditory-vocal association	19	6-10	17.5
Visual-motor association	12	5-01	5.5
Vocal encoding	9	4-01	5
Motor encoding	12	5-00	4
Auditory-vocal automatic	11	5-03	4.5
Auditory-vocal sequential	14	4-02	4.5
Visual-motor sequential	13	5-08	10.5
Total	125	5-05	2
1969-1970 Evaluation (3)			
Auditory decoding	25	7-01	3.5
Visual decoding	15	7-03	2
Auditory-vocal association	20	7-03	12.5
Visual-motor association	20	7-10	10
Vocal encoding	13	5-04	3
Motor encoding	17	7-04	10.5
Auditory-vocal automatic	15	7-03	6.5
Auditory-vocal sequential	16	4-07	4.5
Visual-motor sequential	13	5-08	7.5
Total	154	6-05	11

Detroit Tests of Learning Aptitude

1968-1969 Evaluation (1)	Raw Score	Mental Age	Rank
Auditory attention span for unrelated words--simple score	14	-3-00	1
--weighted score	42	-3-00	1
Auditory attention span for related words	23	3-09	5.5
Visual attention span for objects --simple score	14	-3-00	1
--weighted score	42	-3-00	1

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TABLE 38 (continued)

Detroit Tests of Learning Aptitude

	Raw Score	Mental Age	Rank
Visual attention span for letters	4-2	7-09	16
Disarranged pictures	10	7-06	18.5
1969-1970 Evaluation (2)			
Auditory attention span for unrelated words--simple score	35	5-00	10.5
--weighted score	176	5-00	12
Auditory attention span for related words	33	4-06	12
Visual attention span for objects --simple score	33	6-03	10
--weighted score	169	6-03	13
Visual attention span for letters	4-3	8-03	20.5
Disarranged pictures	4	6-00	7.5
1969-1970 Evaluation (3)			
Auditory attention span for unrelated words--simple score	37	5-09	6.5
--weighted score	188	5-09	8
Auditory attention span for related words	42	5-06	13
Visual attention span for objects --simple score	43	9-03	12
--weighted score	219	9-06	10
Visual attention span for letters	5-1	9-00	19
Disarranged pictures	10	7-06	8.5

Frostig Developmental Test of Visual Perception

1968-1969 Evaluation (1)	Raw Score	Perceptual Age	Rank
Figure-ground discrimination	17	6-06	13
Form constancy	5	5-00	2.5
Position in space	6	6-03	10
Spatial relationships	4	6-00	7

(continued on next page)

TABLE 38 (continued)

Frostig Developmental Test of Visual Perception			
1969-1970 Evaluation (2)	Raw Score	Perceptual Age	Rank
Figure-ground discrimination	15	5-09	4.5
Form constancy	8	6-03	10.5
Position in space	8	8-09+	37
Spatial relationships	5	6-06	9
1969-1970 Evaluation (3)			
Figure-ground discrimination	16	6-00	3.5
Form constancy	11	7-06	4.5
Position in space	7	7-00	15
Spatial relationships	6	7-06	11
Bender Visual Motor Gestalt Test			
1968-1969 Evaluation (1)			
Reproductions from memory			
Satisfactory gestalts	0		9
Simplified gestalts	5		34.5
Fragmented gestalts	4		2
Reproductions from copying			
Satisfactory gestalts	0		5.5
Simplified gestalts	5		29.5
Fragmented gestalts	4		2.5
1969-1970 Evaluation (2)			
Reproductions from memory			
Satisfactory gestalts	0		4.5
Simplified gestalts	6		25
Fragmented gestalts	3		3
Reproductions from copying			
Satisfactory gestalts	0		3
Simplified gestalts	6		21.5
Fragmented gestalts	3		4

(continued on next page)

TABLE 38 (continued)

Bender Visual Motor Gestalt Test		
1969-1970 Evaluation (3)	Raw Score	Rank
Reproductions from memory		
Satisfactory gestalts	0	6
Simplified gestalts	4	37
Fragmented gestalts	5	1
Reproductions from copying		
Satisfactory gestalts	0	4
Simplified gestalts	4	32
Fragmented gestalts	5	1.5
Murphy-Durrell Reading Readiness Analysis		
1968-1969 Evaluation (1)		
Capital letters	25	6.5
Lower-case letters	25	18.5
Phonemes		
Initial position	32	4.5
Final position	10	32.5
Total	42	6
1969-1970 Evaluation (2)		
Capital letters	26	26
Lower-case letters	26	30
Phonemes		
Initial position	37	14
Final position	9	16
Total	46	15.5
1969-1970 Evaluation (3)		
Capital letters	26	23
Lower-case letters	25	9.5
Phonemes		
Initial position	38	25.5
Final position	10	24.5
Total	48	27

(continued on next page)

TABLE 38 (continued)

Durrell Analysis of Reading Difficulty

1968-1969 Evaluation (1)	Raw Score	Rank
Capital letters	26	25
Lower-case letters	24	10.5
Blends	4	12
Primary visual memory	16	36
Intermediate visual memory		
Total words	0	DNR
Total letters	34	10.5
Letters in sequence	33	12.5
Intrusion	3	36.5
Primary hearing sounds	23	18
Intermediate hearing sounds		
Total words	0	DNR
Total consonants	25	13
Total vowels	10	16
Sounds in sequence	34	13
Intrusion	7	34.5
Word recognition	48	33.5
Oral reading recall	21	35.5
Silent reading recall	12	27
Listening comprehension recall	13	8
1969-1970 Evaluation (2)		
Capital letters	26	25
Lower-case letters	24	10.5
Blends	0	5
Primary visual memory	16	30
Intermediate visual memory		
Total words	0	DNR
Total letters	39	14
Letters in sequence	38	14.5
Intrusion	1	40
Primary hearing sounds	12	4
Intermediate hearing sounds		
Total words	0	DNR
Total consonants	15	8
Total vowels	12	14

(continued on next page)

TABLE 38 (continued)

Durrell Analysis of Reading Difficulty

	Raw Score	Rank
Sounds in sequence	26	9.5
Intrusion	11	31
Word recognition	60	33
Oral reading recall	17	21
Silent reading recall	10	17.5
Listening comprehension recall	15	7
1969-1970 Evaluation (3)		
Capital letters	26	24
Lower-case letters	26	24.5
Blends	8	8.5
Primary visual memory	19	36.5
Intermediate visual memory		
Total words	0	DNR
Total letters	67	18.5
Letters in sequence	63	19
Intrusion	18	11
Primary hearing sounds	24	6
Intermediate hearing sounds		
Total words	1	DNR
Total consonants	54	9
Total vowels	28	20.5
Sounds in sequence	77	12
Intrusion	27	8
Oral reading recall	27	32
Silent reading recall	71	25
Listening comprehension recall	22	17.5
Word recognition	60	31

#70

EVALUATION I

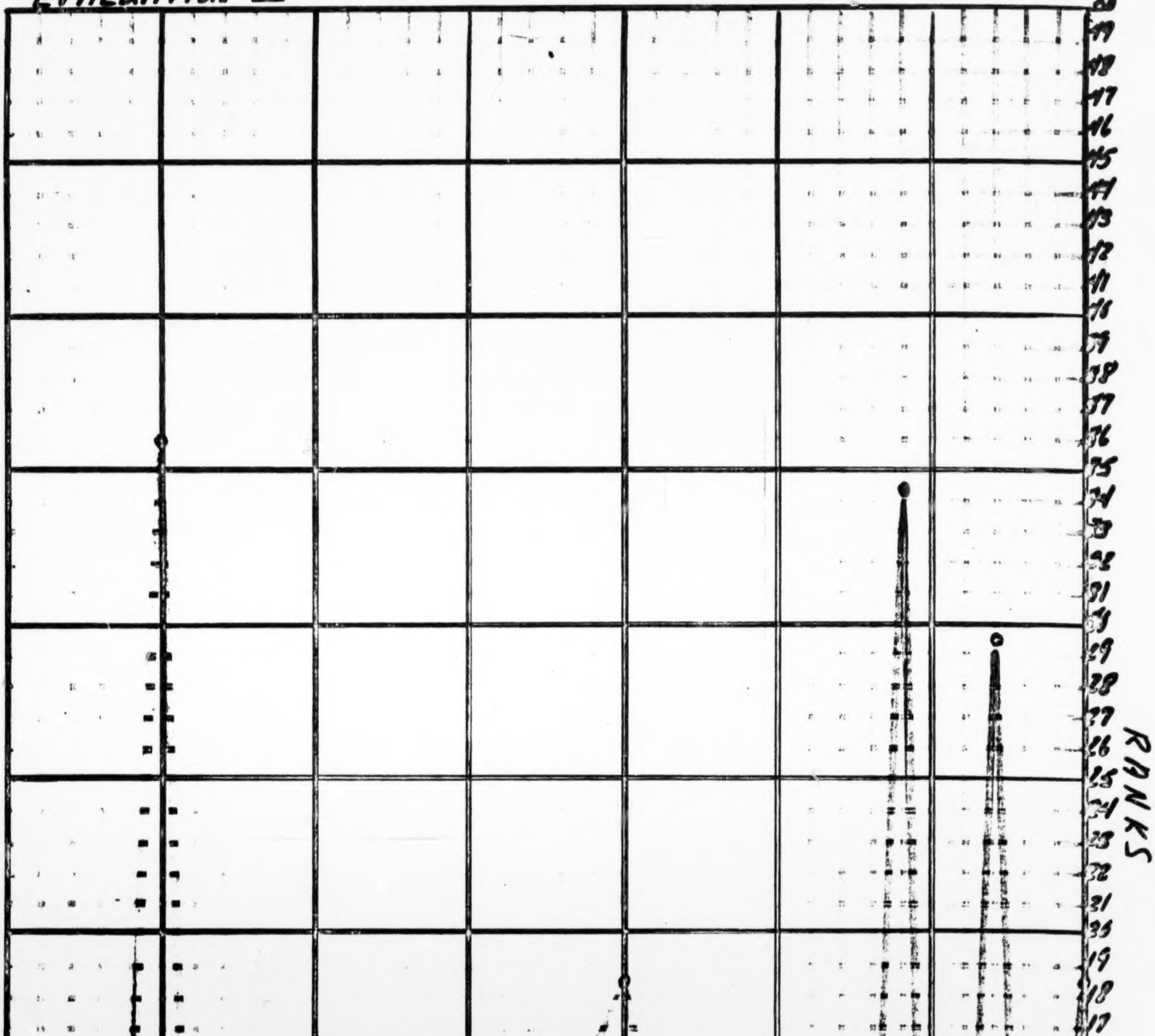


Fig. 21 CA. IQ. MA. and SUBTEST SCORES

#48

EVALUATION I

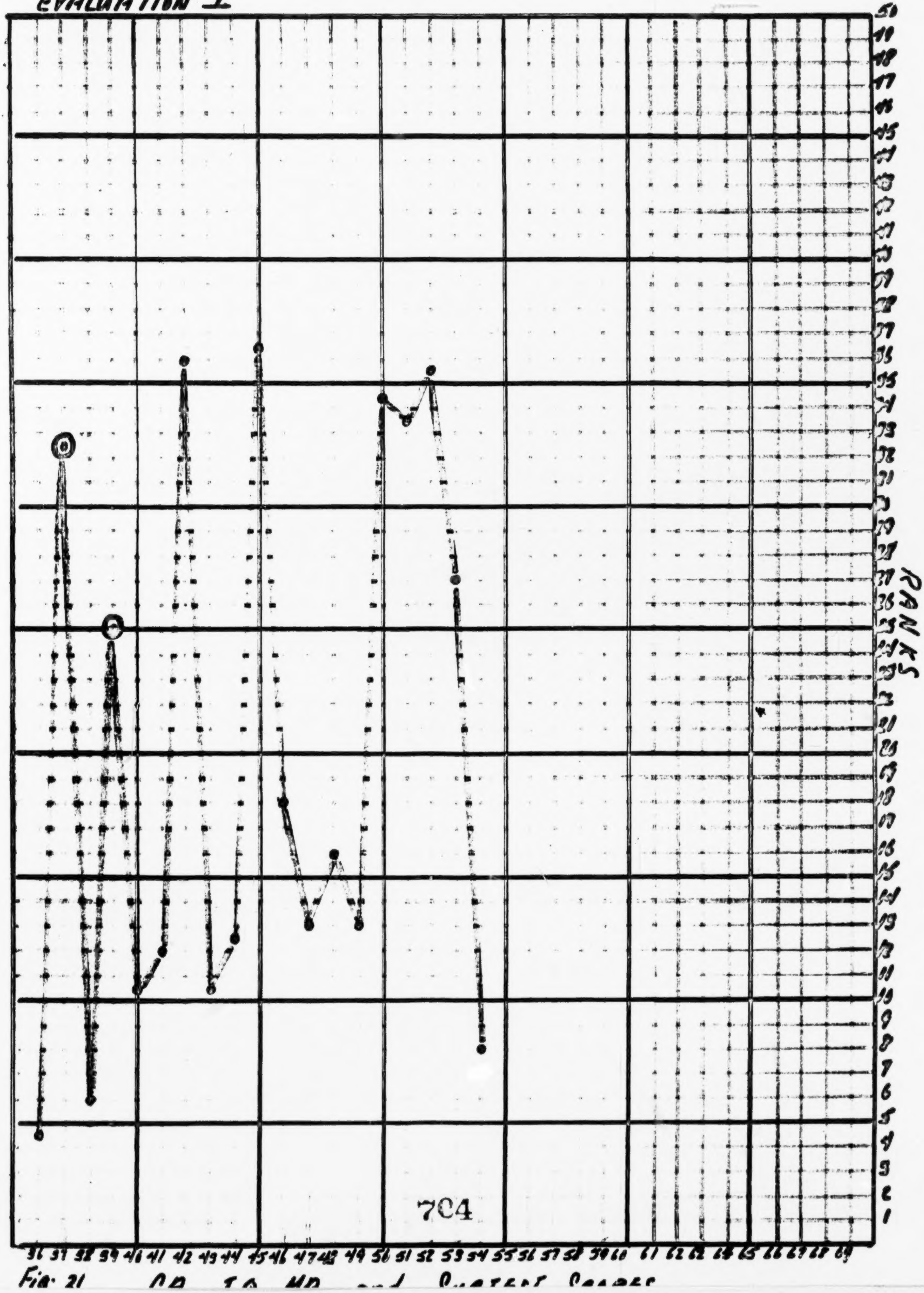
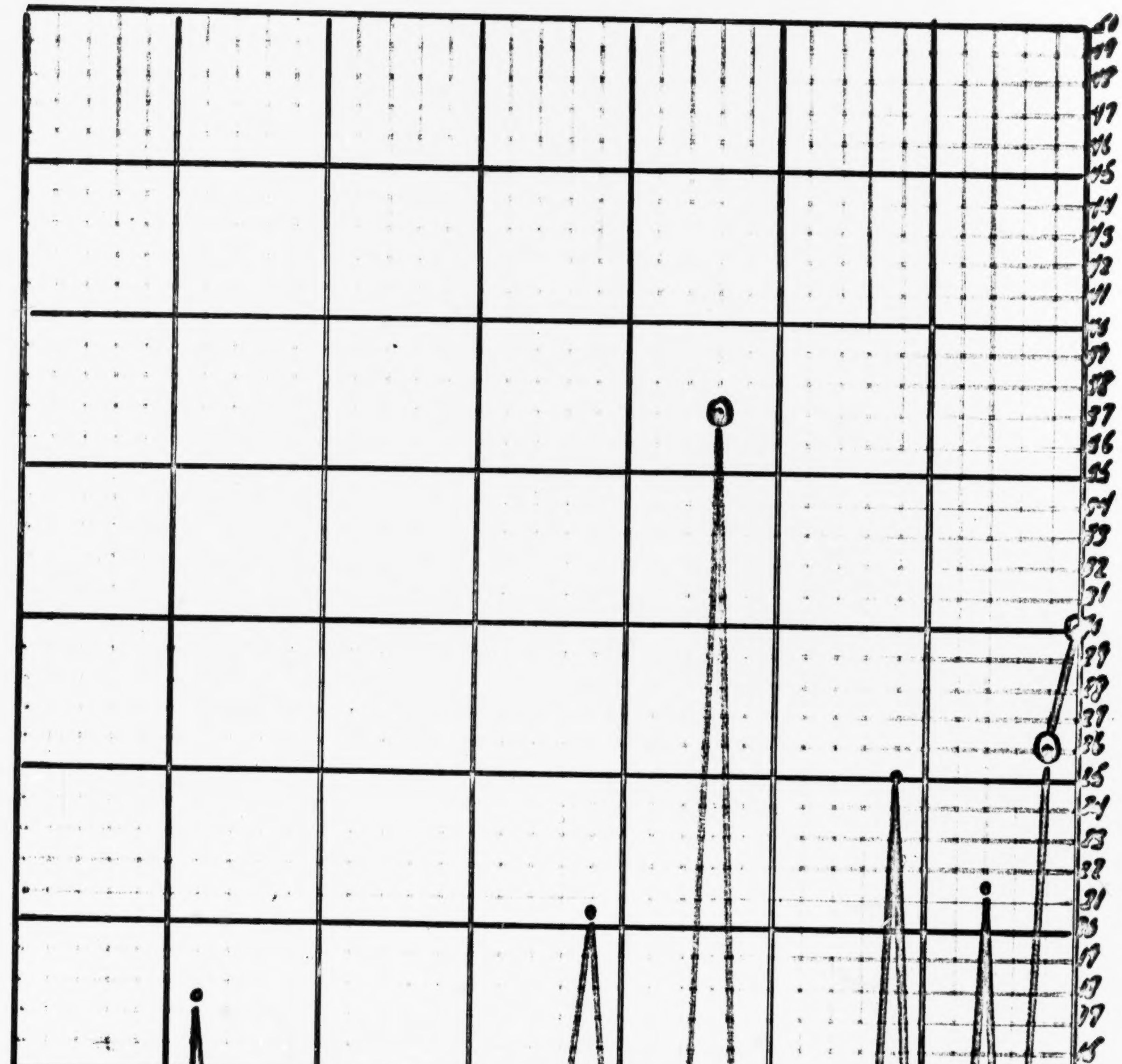


Fig. 21 CA IQ MA and Quotient Scores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EVALUATION II

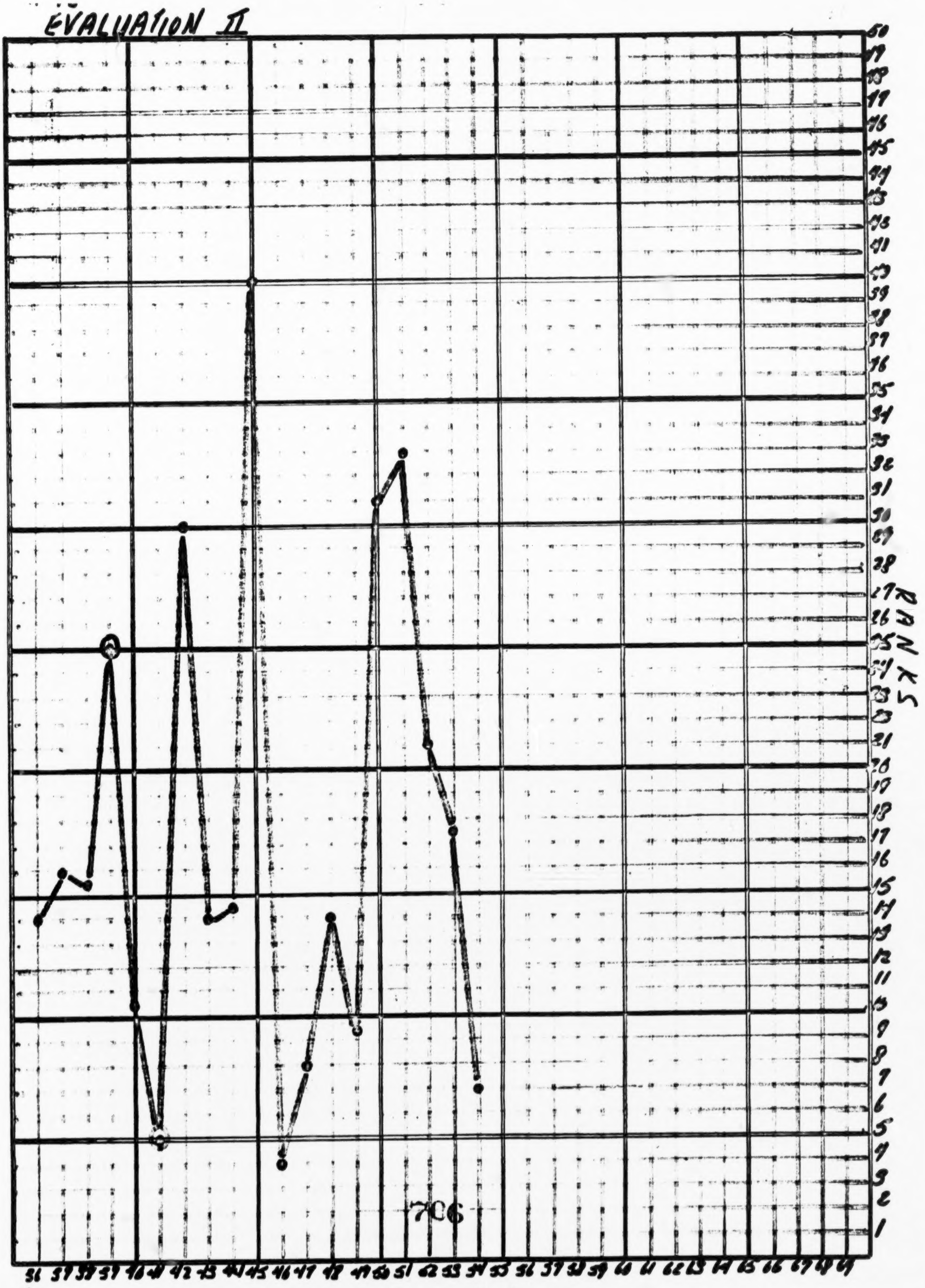

Fig. 22 CA, IG, MA, and SUBTEST SCORES

EVALUATION III

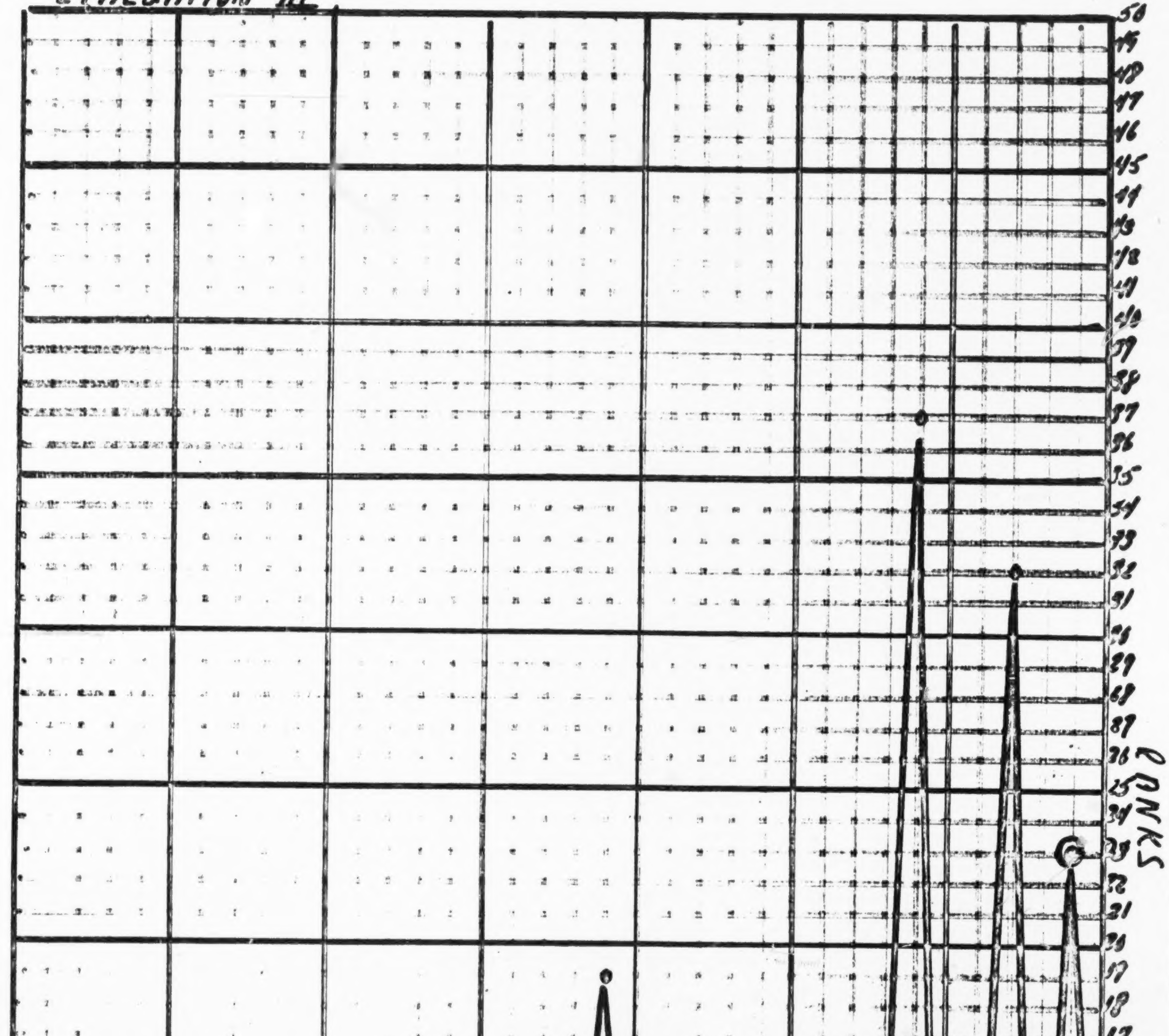

Fig. 23 CA, IQ, MA, and SUBTEST SCORES

EVALUATION III

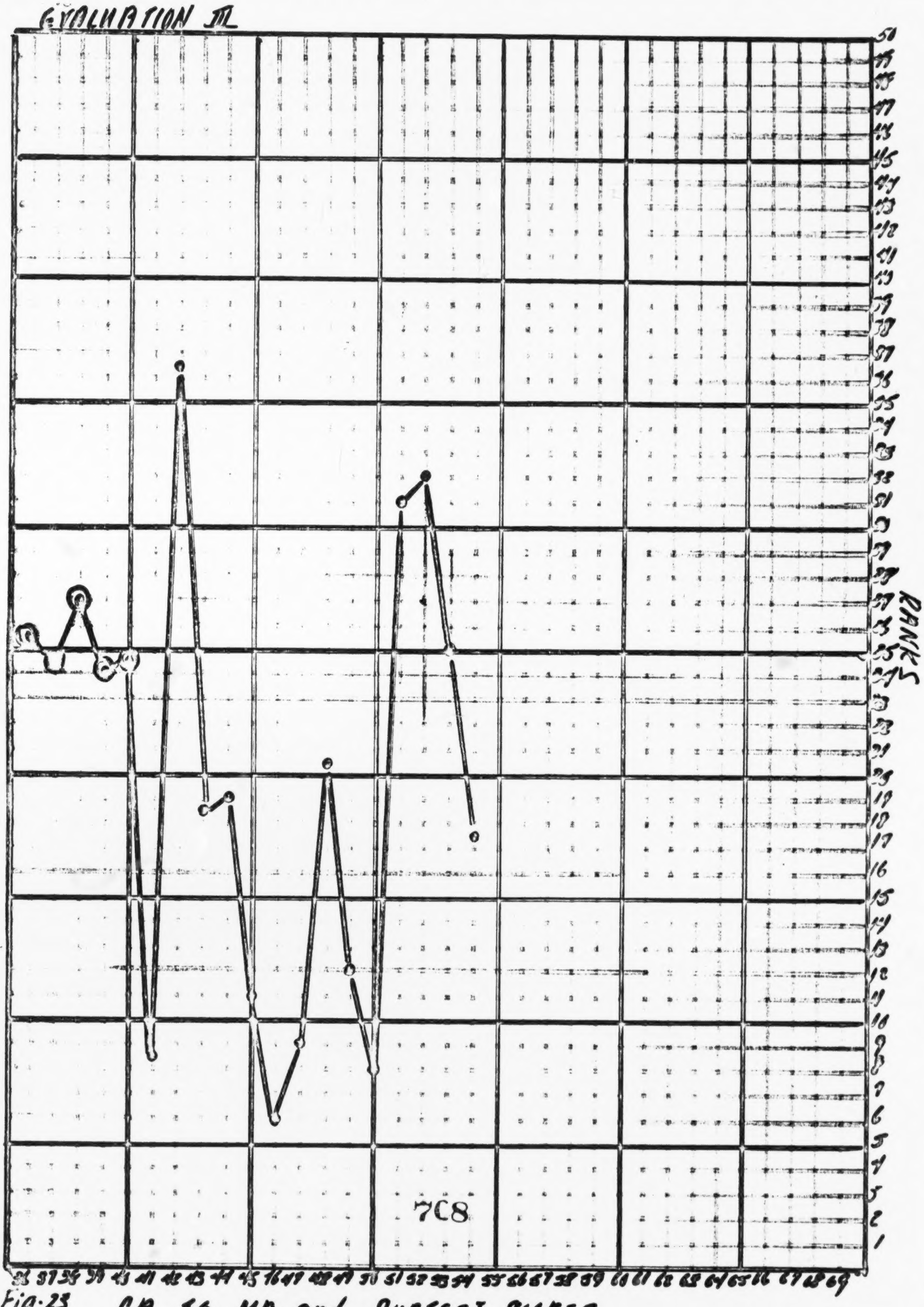

Fig. 23 CA. IQ. MA. and SUBTEST SCORES

it was initially anticipated that she probably would be unable to decode words or, further, to gain meaning from written language. These speculations were not confirmed in observations of her performance. By the third evaluation period, she was functioning very well on most primary subtests and moderately well on Intermediate visual memory and hearing sounds tasks; and she was able to recall information accurately on Oral reading, Silent reading, and Listening comprehension tasks at approximately eight- and nine-year levels. The observation is an important one; for it points out that learning in children is not always predictable and that their flexibilities and variances sometimes may far exceed our least conceivable expectations.

The relative impact of cognitive and emotional characteristics on learning. Neurophysiological, cognitive, and emotional factors all appeared to bear in severely deterrent ways on this child's learning abilities. The total impact was marked; observations revealed that she learned less effectively and easily and performed at substantially lower levels of achievement than the majority of children in this study.

In contrast to Joey and Ricky, whose cognitive performances were characterized by major strengths commensurate with or exceeding their chronological age expectancies, her behavior and patterns of cognitive growth were more congruent with her mental age. Like theirs, her performances too were marked by considerable variation; yet her patterns differed in that she revealed greater numbers of functions below her mental and chronological ages. Thus, although remediation approaches focusing on functions of greater strength were still pursued, it was questionable whether multiple lowering of performances could be conceived in terms of specific learning disabilities.

In spite of her severe handicaps, however, Caroline was able to learn. These changes were manifested primarily in more fundamental abilities which were less impaired and, unpredictably, in her development of reading skills.

Case Study IV: Child 47

In September 1968 when Timmy entered special class D from first grade, he was seven years of age. He had had no prior experience in special class. He remained with teacher D both years. His cumulative record gave little specific information bearing on reasons for his referral. It was known that he was not reading at the time of his placement. Prior to his entrance into special class, he was given an extensive battery of diagnostic tests including the Harris-Goodenough Draw-a-Man Test on which he obtained a mental age of 7-03 years; the Peabody Picture Vocabulary Test where he attained an IQ of 84 and a mental age of 5-07 years; and the Wechsler Intelligence Scale for Children on which he achieved a Verbal IQ of 75, a Performance IQ of 97, and a Full Scale of 84.

Emotional behavior. Observations over the first year revealed that Timmy's emotional behavior was characterized largely by a great deal of tension and underlying anxiety and anger. He also displayed more healthy behaviors. There were periods of relative calm when he responded appropriately for his chronological age with little evidence of emotional overlay. He was able to attend to tasks with minimal distraction, and he interacted well with his peers and teacher. On the other hand, there were prevalent moments when he tended to become extremely frustrated and angry, resisted all overtures of assistance and requests, physically struck out at his teacher and other children, and removed himself totally from such painful situations. At these times, he abandoned all possibilities for working through and clarifying interpersonal and learning difficulties in more positive ways. These levels of tension diminished and mechanisms of defense loosened to some degree over the nine months of school; yet they were still clearly evident at the close of the year.

During the second year, such manifestations began to give way to more flexible, less defensive behavior. Success which he experienced in certain learning situations seemed to cushion some of the feeling of devastation in failure when he was unable to accomplish other tasks. He was a bit more open to involvement in activities which focused directly on his learning difficulties, although he still found such experiences painful and became quite tense. Occasions when he totally removed himself from classroom participation were substantially diminished, and he seemed to be more able to cope with problems directly on a verbal level. In part, some of these changes may have been precipitated by the fact that, although teacher D still became very frustrated with Timmy's resistances, she seemed to be less intent on compelling him to conform to her requirements and further that she began to direct remediation strategies more heavily toward learning functions where he could experience greater success. In addition, Timmy himself had demonstrated a good deal of positive behavior the first year, the inner personal resources of which were important determinants of further change.

Although some characteristics of Timmy's emotional behavior both years seemed to impose some limitations on the range of and his receptivity toward learning processes, he was able to approach tasks in much more attentive and consistent ways than some other children who were very hyperactive. Also, in spite of his considerable difficulties sometimes in interacting with his peers, he did establish positive relationships with and was well accepted by his classmates. Thus, in at least these respects his emotional behavior did not appear to have the consistently debilitating effects on his learning patterns and interpersonal relationships which distinguished affective behavior of Ricky and Caroline.

Characteristics of cognitive behavior. Timmy's patterns of cognitive behavior were similar to those of Joey in that he also displayed relative intactness of most intellectual functions, with the exception of specific learning disabilities, and major performance strengths which far exceeded his chronological and mental ages. His behavior differed from that of Joey in the particular nature and severity of his learning difficulties and in the variant impact of these disabilities on his acquisition of language and reading skills. More specifically, Timmy's performances on the clinical tests revealed particular strength in visual, visual-motor, and visual memory functions. He experienced very severe difficulties in comprehending and retaining information requiring various auditory abilities. His performances are presented in Table 39 and the learning profiles in Figures 24, 25, and 26. These patterns of predominant strength and weakness were reflected in the following ways.

(a) On the Illinois Test of Psycholinguistic Abilities, Detroit Tests of Learning Aptitude and Stanford-Binet, his performances, although quite variable, were consistently higher on visual, visuo-motor, and visual memory tasks than on subtests tap-

TABLE 39

CASE STUDY DATA: PERFORMANCES OF CHILD 47 ON SEVEN CLINICAL TESTS OVER A TWO-YEAR PERIOD

Child: 47
Teacher: D
Date of Birth: 8/16/61
Chronological age (September, 1968): 7-00 Years

Stanford-Binet

1968-1969 Evaluation (1)	Score	Rank
IQ	89	34
Mental age	6-08	6
Conceptual-language functions	38	7
Visuo-motor functions	18	19.5
Auditory memory functions	0	4
1969-1970 Evaluation (3)		
IQ	95	38.5
Mental age	8-06	17
Conceptual-language functions	86	19
Visuo-motor functions	42	30
Auditory memory functions	8	11.5

Illinois Test of Psycholinguistic Abilities

1968-1969 Evaluation (1)	Raw Score	Language Age	Rank
Auditory decoding	18	5-02	14
Visual decoding	13	6-03	13
Auditory-vocal association	16	5-10	13
Visual-motor association	8	3-08	4.5
Vocal encoding	13	5-04	11.5
Motor encoding	14	5-10	17
Auditory-vocal automatic	9	5-00	3
Auditory-vocal sequential	13	3-11	4.5
Visual-motor sequential	16	6-06	38
Total	120	5-03	7

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TABLE 39 (continued)

Illinois Test of Psycholinguistic Abilities

1969-1970 Evaluation (2)	Raw Score	Language Age	Rank
Auditory decoding	14	4-05	1.5
Visual decoding	17	8-09	24
Auditory-vocal association	18	6-06	15
Visual-motor association	22	8-07	37
Vocal encoding	17	6-07	17
Motor encoding	18	7-11	19
Auditory-vocal automatic	12	6-01	8
Auditory-vocal sequential	19	5-04	15.5
Visual-motor sequential	27	9-00+	42
Total	164	6-10	16
1969-1970 Evaluation (3)			
Auditory decoding	22	6-02	2
Visual decoding	19	8-09+	18.5
Auditory-vocal association	20	7-03	12.5
Visual-motor association	22	8-07	20.5
Vocal encoding	22	8-11	16
Motor encoding	16	6-10	6
Auditory-vocal automatic	19	8-09	28.5
Auditory-vocal sequential	17	4-10	6.5
Visual-motor sequential	21	9-00+	32.5
Total	178	7-07	11

Detroit Tests of Learning Aptitude

1968-1969 Evaluation (1)	Raw Score	Mental Age	Rank
Auditory attention span for unrelated words--simple score	35	5-00	18
--weighted score	176	5-00	20
Auditory attention span for related words	21	3-06	4
Visual attention span for objects --simple score	55	13-09	41
--weighted score	309	15-00	41

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TABLE 39 (continued)

Detroit Tests of Learning Aptitude

	Raw Score	Mental Age	Rank
Visual attention span for letters	5-1	9-00	31
Disarranged pictures	3	5-09	6
1969-1970 Evaluation (2)			
Auditory attention span for unrelated words--simple score	37	5-09	16.5
--weighted score	186	5-06	17.5
Auditory attention span for related words	29	4-03	10
Visual attention span for objects --simple score	42	9-00	26
--weighted score	221	9-09	27
Visual attention span for letters	3-4	7-03	8.5
Disarranged pictures	23	10-09	35
1969-1970 Evaluation (3)			
Auditory attention span for unrelated words--simple score	41	7-00	16.5
--weighted score	199	6-03	13
Auditory attention span for related words	28	4-03	3.5
Visual attention span for objects --simple score	48	11-00	22
--weighted score	251	11-03	23
Visual attention span for letters	4-3	8-03	10.5
Disarranged pictures	20	10-00	20.5

Frostig Developmental Test of Visual Perception

1968-1969 Evaluation (1)	Raw Score	Perceptual Age	Rank
Figure-ground discrimination	20	8-03	33
Form constancy	14	9-00	36.5
Position in space	6	6-03	10
Spatial relationships	7	8-03	29.5

(continued on next page)

TABLE 39 (continued)

Frostig Developmental Test of Visual Perception			
1969-1970 Evaluation (2)	Raw Score	Perceptual Age	Rank
Figure-ground discrimination	20	8-03	32
Form constancy	14	9-00	33.5
Position in space	7	7-00	21.5
Spatial relationships	7	8-03	30
1969-1970 Evaluation (3)			
Figure-ground discrimination	20	8-03	30.5
Form constancy	14	9-00	17
Position in space	8	8-09	31.5
Spatial relationships	8	8-03	36
Bender Visual Motor Gestalt Test			
1968-1969 Evaluation (1)			
Reproductions from memory			
Satisfactory gestalts	7		42
Simplified gestalts	2		42
Fragmented gestalts	0		31
Reproductions from copying			
Satisfactory gestalts	4		34.5
Simplified gestalts	5		29.5
Fragmented gestalts	0		30
1969-1970 Evaluation (2)			
Reproductions from memory			
Satisfactory gestalts	5		38.5
Simplified gestalts	4		37
Fragmented gestalts	0		31
Reproductions from copying			
Satisfactory gestalts	6		41.5
Simplified gestalts	3		41.5
Fragmented gestalts	0		28.5

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TABLE 39 (continued)

Bender Visual Motor Gestalt Tests		
1969-1970 Evaluation (3)	Raw Score	Rank
Reproductions from memory		
Satisfactory gestalts	7	42
Simplified gestalts	2	42
Fragmented gestalts	0	29.5
Reproductions from copying		
Satisfactory gestalts	7	39
Simplified gestalts	2	39
Fragmented gestalts	0	27

Murphy-Durrell Reading Readiness Analysis		
1968-1969 Evaluation (1)		
Capital letters	24	4
Lower-case letters	23	10.5
Phonemes		
Initial position	35	7
Final position	9	18
Total	44	9.5
1969-1970 Evaluation (2)		
Capital letters	25	7
Lower-case letters	25	16
Phonemes		
Initial position	38	30
Final position	9	9
Total	47	22.5
1969-1970 Evaluation (3)		
Capital letters	26	23
Lower-case letters	25	9.5
Phonemes		
Initial position	37	5.5
Final position	10	24.5
Total	47	9

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TABLE 39 (continued)

Durrell Analysis of Reading Difficulty	Raw Score	Rank
1968-1969 Evaluation (1)		
Capital letters	26	25
Lower-case letters	23	6
Blends	2	11
Primary visual memory	10	8.5
Intermediate visual memory		
Total words	0	DNR
Total letters	27	7
Letters in sequence	25	7
Intrusion	0	40.5
Primary hearing sounds	17	6
Intermediate hearing sounds		
Total words	DNA[a]	DNR
Total consonants	DNA	6
Total vowels	DNA	6
Sounds in sequence	DNA	6
Intrusion	DNA	6
Word recognition	4	7.5
Oral reading recall	1	7
Silent reading recall	DNA	8.5
Listening comprehension recall	22	32
1969-1970 Evaluation (2)		
Capital letters	26	25
Lower-case letters	23	7
Blends	0	5
Primary visual memory	11	7.5
Intermediate visual memory		
Total words	0	DNR
Total letters	38	11.5
Letters in sequence	36	11
Intrusion	3	35
Primary hearing sounds	12	4

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TABLE 39 (continued)

Durrell Analysis of Reading Difficulty	Raw Score	Rank
Intermediate hearing sounds		
Total words	0	DNR
Total consonants	27	14
Total vowels	4	9.5
Sounds in sequence	28	11
Intrusion	22	17
Word recognition	4	5.5
Oral reading recall	3	6.5
Silent reading recall	DNA	6
Listening comprehension recall	22	20
1969-1970 Evaluation (3)		
Capital letters	26	24
Lower-case letters	26	24.5
Blends	1	6
Primary visual memory	13	10
Intermediate visual memory		
Total words	0	DNR
Total letters	53	11.5
Letters in sequence	53	13.5
Intrusion	2	38
Primary hearing sounds	24	6
Intermediate hearing sounds		
Total words	0	DNR
Total consonants	55	10
Total vowels	17	9.5
Sounds in sequence	71	9
Intrusion	13	18
Oral reading recall	10	14
Silent reading recall	8	15
Listening comprehension recall	21	11
Word recognition	10	10

[a] DNA indicates that subtest was not administered.

EVALUATION I

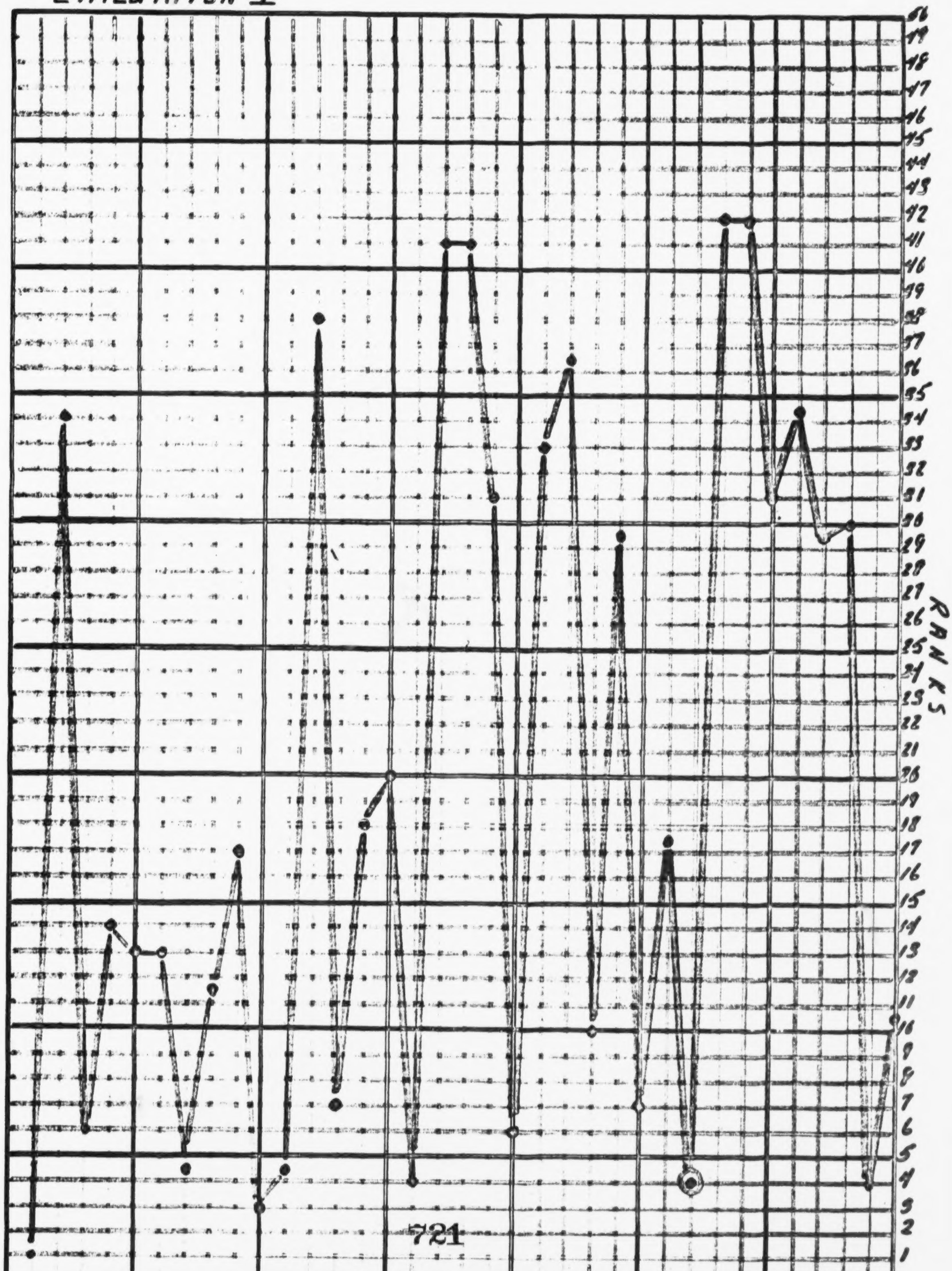


Fig. 9d CA. IQ. MA. and SUBTEST SCORES

EVALUATION I

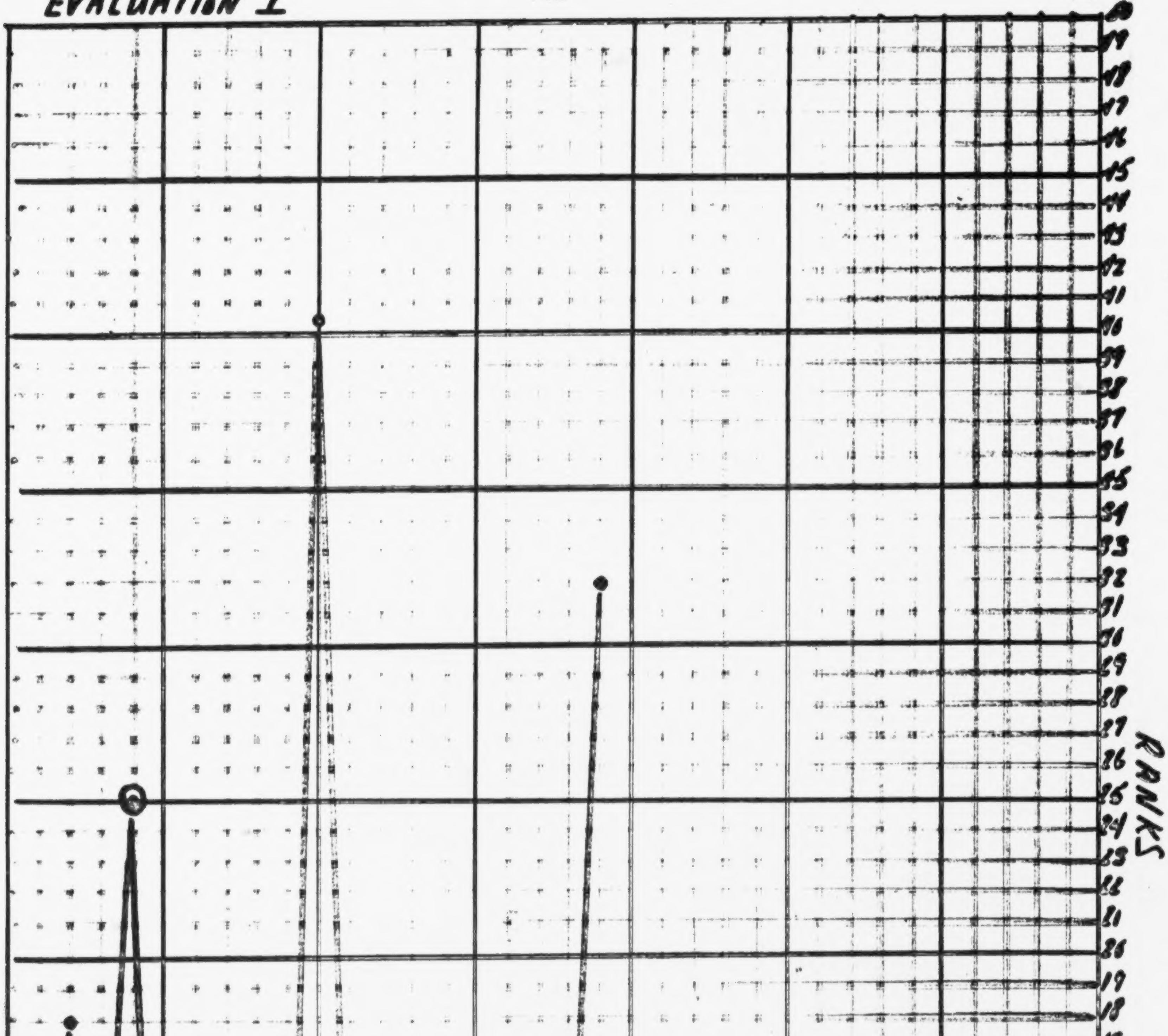
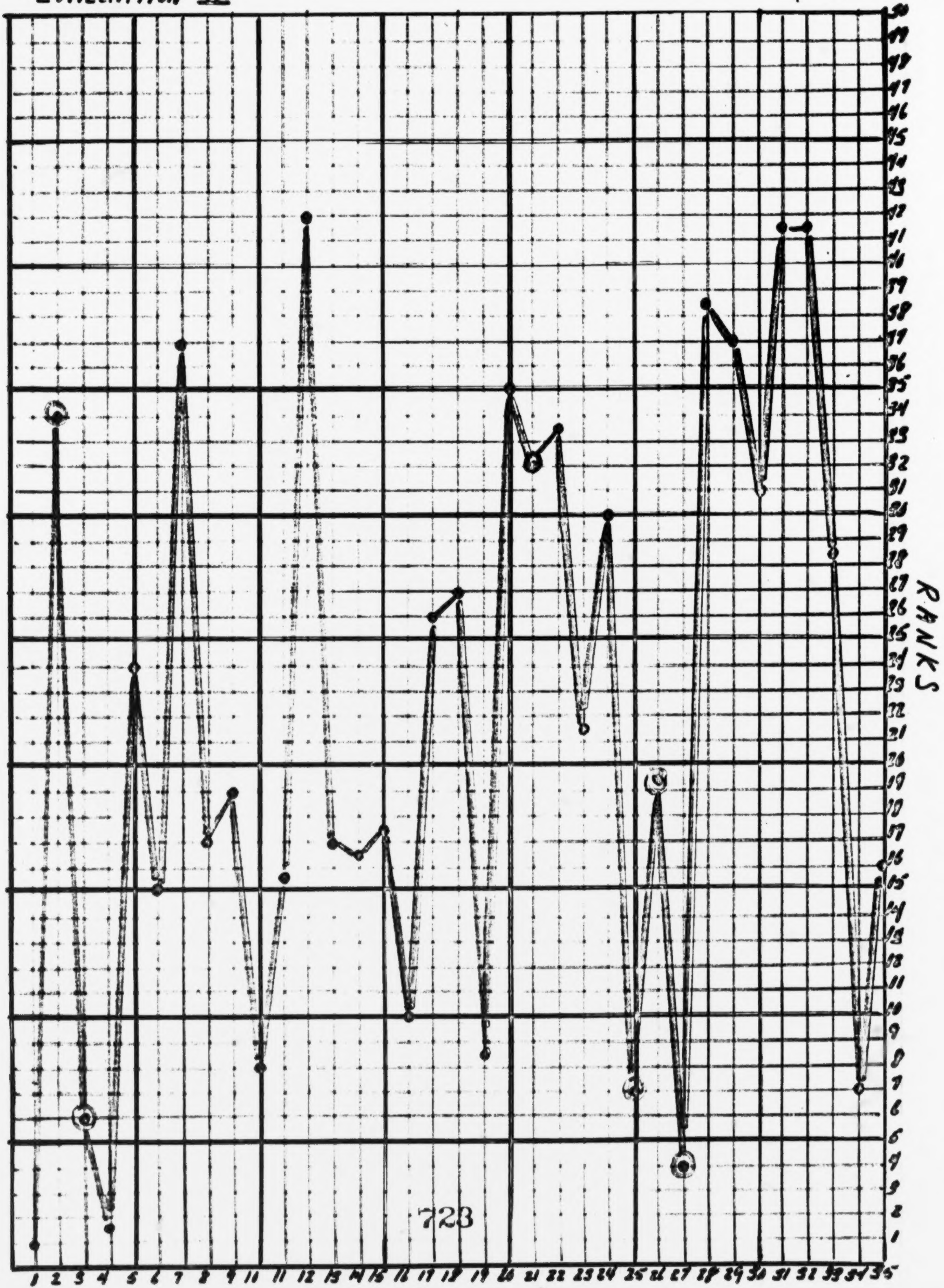


Fig. 24 CA, IQ, MA, and PRETEST SCORES

#47

EVALUATION II



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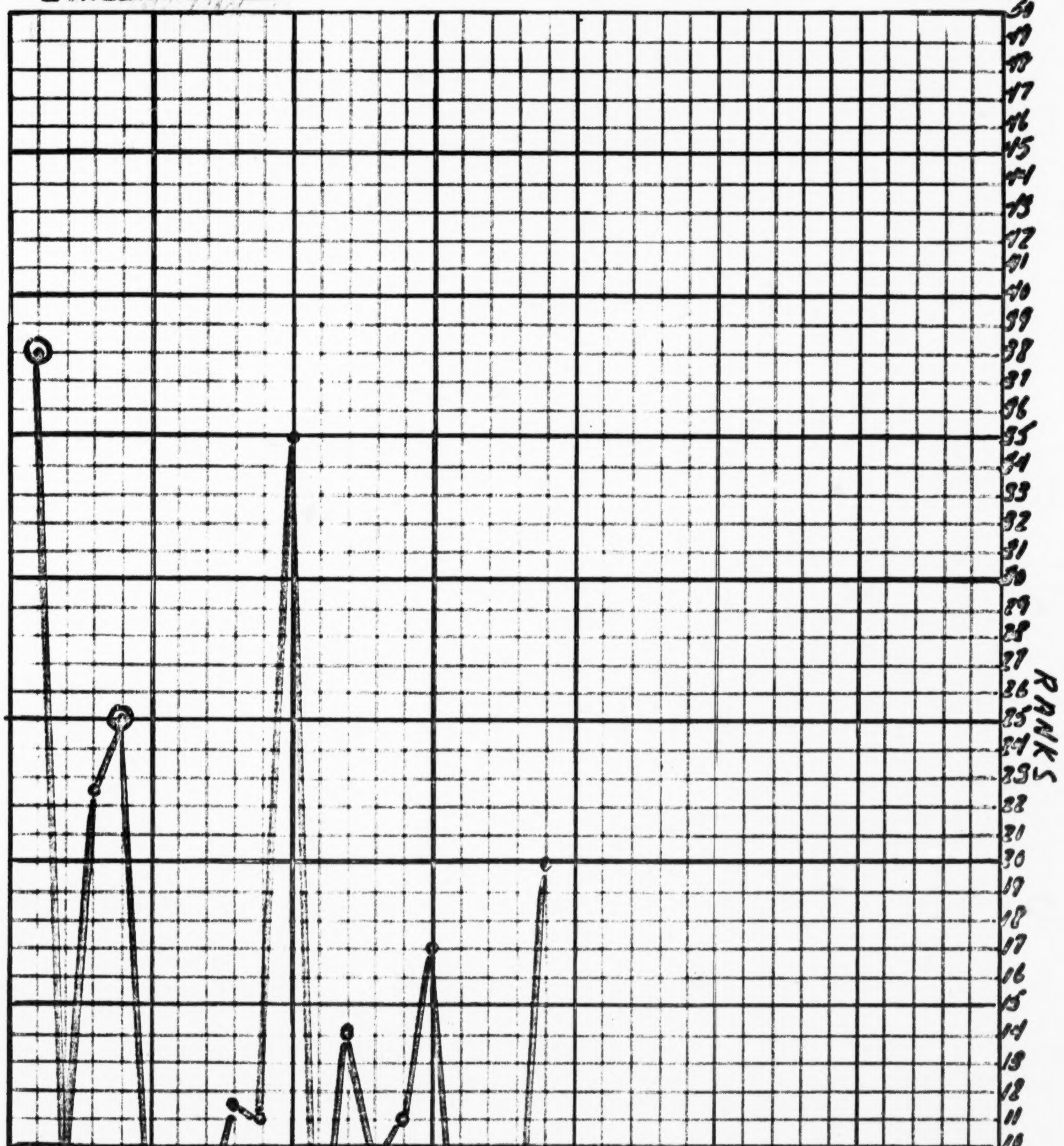

Fig. 25 CA. I.Q. MA. and SUBTEST SCORES

EVALUATION VI

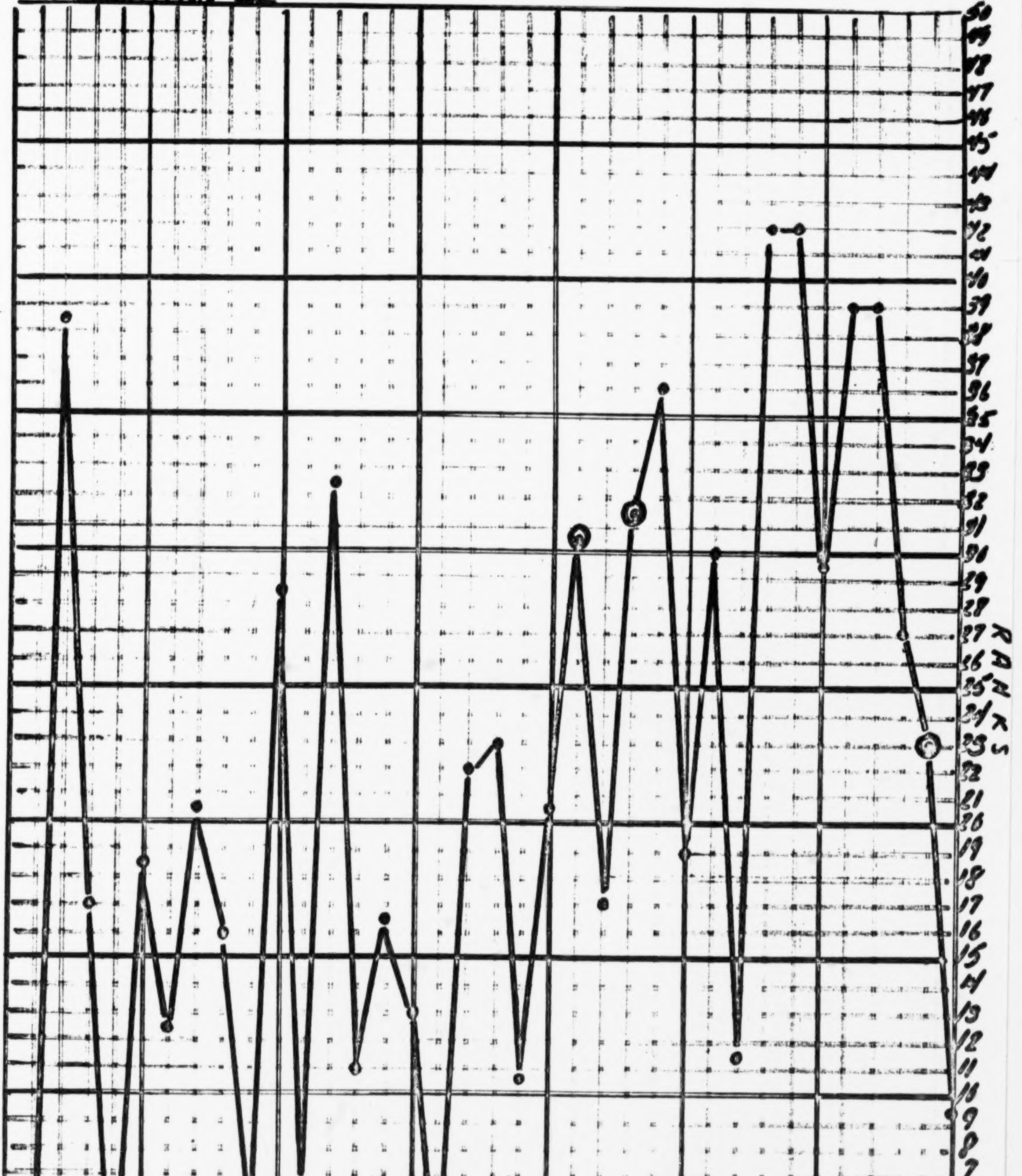

Fig. 26 CA. IQ. MA. and SUBTEST SCORES

EVALUATION III

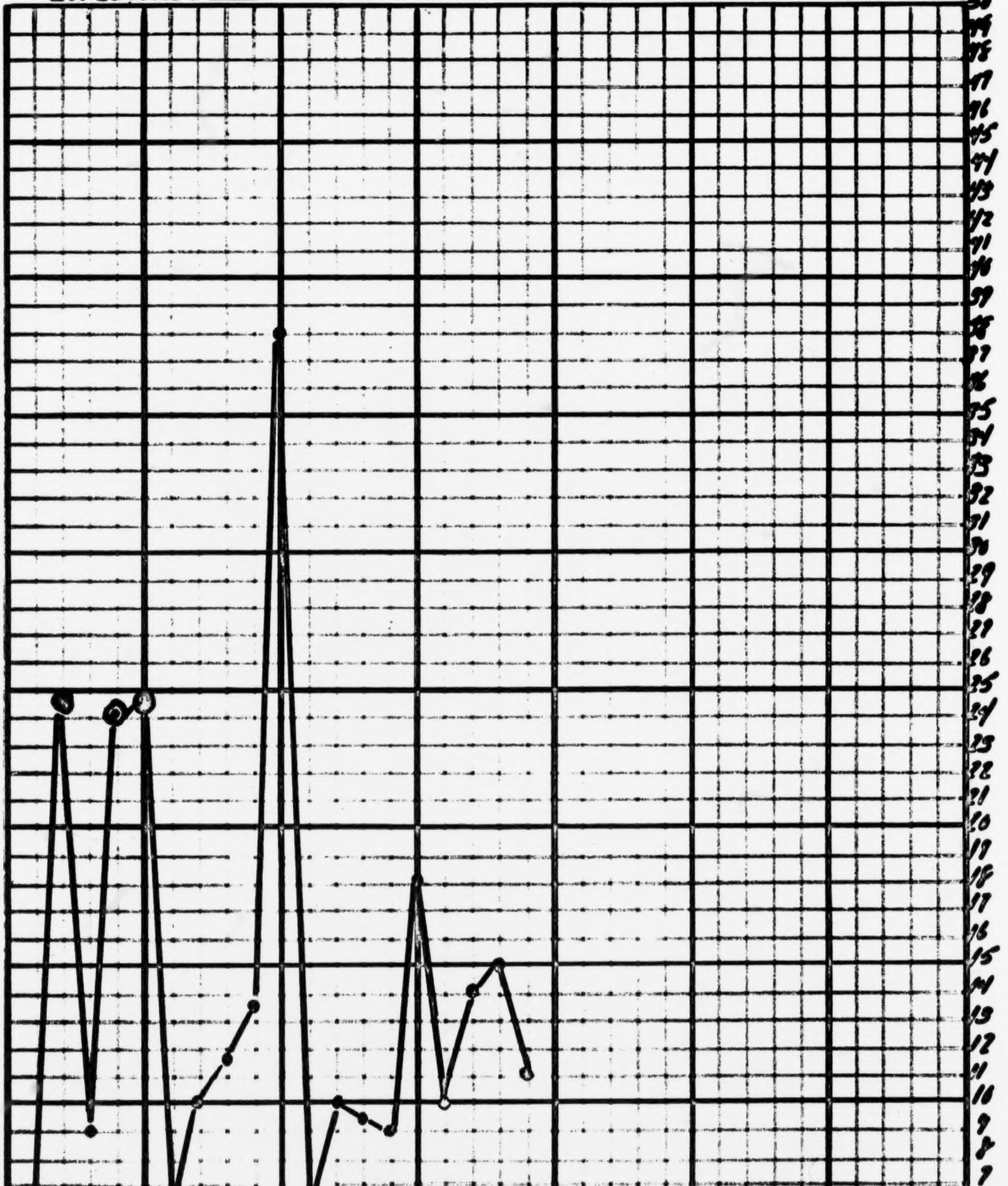

Fig. 26 CA. I.Q. MA. and SUBTEST SCORES

ping auditory receptive language and auditory discrimination, sequencing, and recall abilities for numerical and verbal information.

It is not clearly apparent to the writer why his performances on tasks of higher abilities were so variable. Such fluctuations may have reflected instabilities of intellectual process, despite the observation that his higher performances seemed to be quite consistent across all clinical tests. These drops were not evident across all subtests and occurred primarily on the second evaluation.

(b) On the Frostig Developmental Test of Visual Perception and the Bender Visual Motor Gestalt Test, he displayed fairly consistent and high levels of ability in his accomplishment of visuo-motor tasks.

(c) On the Murphy-Durrell Reading Readiness Analysis and the Durrell Analysis of Reading Difficulty, there were some indications also of these differences in ability. For example, on neither test did he display evidence of reversals in letters or words.

On the Durrell Analysis, it was anticipated that both intermediate subtests would be difficult for him to accomplish; yet even on these tasks there were differences in his approach. On the first evaluation, he was totally unable to cope with the hearing sounds subtest; on the other hand, he was able and willing to attempt visual memory tasks. In addition, while Timmy's performance on these subtests did not differ substantially in terms of levels of recall on the third evaluation, his accuracy was greater on the visual memory subtest.

There were no significant variations in his final achievements on Primary visual memory and hearing sounds subtests. Yet, initial and second evaluation subtests revealed considerable degrees of difference in levels of functioning. By the close of the second year, Timmy still was essentially unable to discriminate, synthesize, and recall sounds of blends.

(d) Finally, classroom observations revealed numerous occasions when he was given directions which he initially did not understand or later was unable to recall. In addition, it was pointed out above that there were considerable differences in his attitudes toward learning when he was required to complete tasks tapping predominantly visual functions and when he attempted to accomplish tasks more heavily reliant on auditory abilities.

Despite the observation that Timmy showed relatively intact abilities, with the exception of his specific learning difficulties, and had major intellectual strengths exceeding chronological age expectancies, his development of reading skills was very slow and his accomplishment of such tasks extremely labored.

His Listening comprehension recall remained stable over the three evaluation periods. His facility in and recall of details from Oral reading increased slightly; yet he still manifested many hesitations, word-by-word phrasing, and required numerous examiner pronunciations at lowest level paragraphs. His Word recognition did not reveal marked increases. His Silent reading had not yet become internalized by the end of the second year; he continued to read subvocally.

The relative impact of cognitive and emotional characteristics on learning. Extreme difficulties that Timmy manifested both years in acquiring oral and written language abilities suggested that certain determinants were bearing in severely detrimental ways on his learning. Although his emotional overlay at times appeared to hinder his achievement, it was not conceived that such problems were the primary deterrents. More likely, the major insult inhered in his severe auditory disabilities, which were considerably more pervasive than disorders manifested by Ricky. In evaluating change in his reading and language abilities over the two years, it seemed that either his strengths in visual and visuo-motor functioning were not stable or significantly powerful enough to counter severe effects of such disorders and facilitate development of language skills commensurate with chronological age expectancies, or that various auditory functions assume a more major role in early attainment of such abilities.

Comparisons of Four Styles of Cognitive Performance and Emotional Behavior: Implications for Learning

The prior section has presented case studies of four children who were conceived to exemplify different patterns of specific cognitive strength and weakness, styles of emotional behavior, degrees of total impairment, and variant degrees of change in their conceptual, language, and reading abilities and skills. It was the primary intent of these discussions to explore briefly some of the ways in which different cognitive and emotional characteristics appeared to enhance or impair learning in children. The following points summarize comparative findings with respect to these behaviors and their implications.

1. To a degree, all of the children displayed some fluctuations in performance over the three evaluation periods. Yet, class and test performances of the three children whose behavior was characterized by varying degrees of emotional overlay tended to be less consistent and revealed evidence of greater variability than the achievements of one child who did not display such behavior. Deterrent effects of these less adaptive behaviors, in part, seemed to inhere in overt manifestations such as: (a) low levels of tolerance for and withdrawal from involvement in learning

processes which were chiefly reliant on more impaired intellectual abilities; (b) difficulties in attending to tasks over sustained periods of time; (c) greater auditory and visual distractions by the surrounding environment; and/or (d) wide vacillations in attitude and feeling as a function of interpersonal difficulties. To the extent that they are manifested, such influences may tend to limit change in intellectual functions of severest impairment, lower frequencies of more efficient learning experiences, and/or distorted and slow acquisition processes of cognitive and affective learning.

2. Learning disabilities, similar in kind and degree of severity, were manifested in diverse ways in performances and gains in achievement. Thus, for some children specific disorders may have a much more widely pervasive and severely debilitating effect on learning and intellectual development than others.

3. Disorders in visuo-motor functioning did not appear to have the severely detrimental effects on reading and language development that were observed in relation to certain manifestations of auditory disorders. To a greater extent, they were evident in impairment of writing skills of children. Moreover, prominent strengths in visual and visuo-motor functioning of one child did not seem to be dominant to a degree sufficient to counter deterrent effects of severe auditory disabilities.

In light of the fact that auditory functions are so vital to early development of expressive and receptive language abilities, it may be that the influence of such disorders overrides the potential impact of visual and visuo-motor strengths in promoting later development of reading skills. Such an eventuality seems to be more likely when auditory disorders affect receptive language abilities.

4. With the exception of a few minor fluctuations over the three evaluation periods, three children shared in common tendencies toward greater and more consistent change in intellectual abilities of greater strength and less growth in disordered cognitive functions. Further, despite varying degrees of change, patterns of predominant strengths and weaknesses were still distinguishable.

As mentioned above, sources of variation in intellectual strengths of the last child discussed were not clear to the writer. These fluctuations possibly may have reflected instabilities of intellectual process or performance variations in response to different examiners, although they were not evident across all subtests and drops in levels of achievement occurred primarily in the second evaluation.

5. It was evident that the particular nature of prominent strengths of children as well as specific learning disabilities,

substantially influenced facilities in acquisition of reading, language, and conceptual skills. Prominent auditory receptive language and conceptual abilities of two children seemed to have a significant bearing upon the relative ease and gainful development of reading skills.

6. In light of psychological characteristics of one child, it was apparent that multiple lowerings of cognitive abilities and emotional disorders had a marked and mutually deterrent impact on learning which tended to be reflected in a substantially lower IQ, evidence of greater numbers of performances on individual subtests below chronological and mental age expectancies, and emotionally and socially immature behavior. Although such characteristics not surprisingly seem to result in more labored and slower rates of acquisition, they do not imply that children are unable to learn. This observation was clearly reflected in the unpredicted gains in achievement of one child discussed in the preceding section.

7. To varying degrees, all of these children were especially responsive to teacher attitude; with the exception of Joey, who seemed to be somewhat more stable, there were evident tendencies toward considerable variation in performances. Such observations again may have been symptomatic of emotional overlay. Possibly they were indicative of greater learning process instabilities in children who experience various learning disorders. Prob-

ably they were reflective of substantial differences in teacher attitudes. In any event, such observations have serious implications regarding needs for teacher consistency, sensitivities, and knowledge toward educating learning and emotionally impaired children.

In the final analysis of ways in which children did or did not learn, no one of these factors was conceived to be singularly determinant. Patterns of performance and growth were variously contingent on multiple cognitive and emotional factors and teacher influences. In certain instances, changes in these children were highly predictable on the basis of observable manifestations. On the other hand, some behaviors were quite unanticipated. In the latter respect, such observations seemed to reflect again predominant characteristics of multidimensionality, variability, and ongoing processes of change which universally distinguished learning in all of the children who participated in the study and the writer's yet formative stage in understanding complex human behavior.

Determinants of Cognitive Development and Learning: An Attempt at Integration

The present chapter has been concerned primarily with clinical evaluations of ways in which multiple, varied determinants affected cognitive development and learning in children. Toward this primary purpose, discussions have included: (a) observations of teachers in relation to four dimensions of behavior and educational classroom strategies; i.e., teacher-child interactions, task presentations, task selections, and the organization of classroom instruction; (b) evaluations of class and test performance characteristics and gains in achievement of children; and (c) evaluations of emotional behavior of children and its apparent effect on learning. In summary, these clinical studies have disclosed the following findings.

(a) Teacher attitudes were of paramount importance in motivating children to engage in learning processes with the maximum care, efficiency, competence, and compassion of which they were capable.

(b) Remediation strategies implemented by teachers probably had varying effects in influencing performance and emotional characteristics of children. To the degree that they were congruent with psychological behaviors of children and assured opportunities for success, they tended to promote higher levels of performance. To the degree that they ran counter to emotional and cognitive needs, motivations waned, children tended to become more inattentive and distractible, and optimal levels of performance were less frequently in evidence.

(c) The degree to which characteristics of emotional overlay interfered with long-range cognitive development in children remained largely undeterminable on the basis of this study. Contemporary and short-term effects of such influences were apparent in their relative impact on consistencies in levels of performance of children, possibly degrees to which specific learning dysfunctions moved or were resistant to change, and possibly distractions and/or slowed rates in acquisition of cognitive and affective learnings.

(d) Finally, child variables such as prominent cognitive strengths, the nature and severity of specific learning disabilities, and the extensiveness of total intellectual impairment appeared to have significant bearing on contemporary class and test performances and gains in achievement of children. Chronological age did not appear to be exclusively related to such patterns.

In essence, it was clearly apparent that constellations of cognitive, affective, neurophysiological factors in children, and school- and teacher-related variables affected levels of performances on academic tasks.

Such psychological determinants have been variously explored on a more limited basis by other investigations. On the other hand, these observations of the present study seem to indicate a substantial need for intensive examination of a wide array of variables which extend beyond the somewhat compelling tendencies of some researchers and school authorities in their educational placement procedures to rely exclusively on general intelligence and achievement tests in assessing intellectual potentials in children.

Earlier in this chapter it was postulated that the present study was limited in terms of shedding insight on ways in which apparently stable patterns of cognitive and affective development in children might be altered. The conclusion certainly does not preclude possibilities of such an eventuality; further, it should not be construed to mean that children did not change. In its wiser portions, if this study makes any contributions, they inhere in those contentions that competency levels of performance and learning in children are extremely variable and open to change, probably beyond our least conceivable expectations. While such variables may or may not always lead to subsequent change in cognitive and affective styles, they are vital to the ways in which children cope with living and learning.

CHAPTER V

PRESENTATION AND ANALYSIS OF GROUP DATA

Analyses of group data were intended to shed some insight on four principal questions. These were:

(a) To what extent were subtests designated as involving auditory, visual, visuo-motor, mnemonic, language, and conceptual functions correlated and thus perhaps measures of similar learning processes in children?

(b) Second, to what extent were individual subtests correlated with measures of more general achievements such as Oral and Silent reading and thus might be conceived as predictive of those general levels of performance?

Toward consideration of these two issues, an intercorrelation matrix of all pretest scores was obtained.

(c) Another question of interest centered on these determinations: Which subtests were most predictive of gains in other subtests of fundamental abilities and more general measures of achievements; and a related issue, to what extent were initial levels of performance on subtests and total tests predictive of later gains? An intercorrelation matrix of all pretest scores and gains in achievement between the first and third evaluations was obtained with the intent of exploring these questions.

(d) Fourth and last, were there significant differences between mean performances of children with respect to the 53 subtest, derived, and total scores across the three evaluation periods; and did achievements of children tend to move in a positive direction? A one-way analysis of variance with repeated measures was done in order to reveal these trends in performances of children on the seven clinical tests over the two-year period.

In light of the already overwhelming length of this exposition, only a small portion of these data will be presented. Specifically, discussion will be concerned with these considerations: (a) correlations between pretest measures of auditory functioning; (b) intercorrelations of pretest measures of visual and visuo-motor functioning; and (c) the trend analysis of performances of children over the three evaluation periods.

Correlations Between Pretest Measures of Auditory Functioning

The degree to which subtests purported to measure similar abilities are correlated is directly relevant to both diagnosis and remediation of learning disabilities in children. Various subtests revealing extremely low correlations may indicate poor validity of measures of designated learning processes. Second, specific intellectual functions may be so diverse that assumptions of transfer of learning among abilities become highly questionable. In light of the large numbers of low correlational values among the subtests involving auditory functioning, both of these factors may have had considerable bearing on results.

From the seven clinical tests, 12 subtests and derived measures of various auditory abilities were selected and their correlations examined. These variables and data are presented in Table 40; a listing of the 12 variables appears in Table 41. They revealed the following results.

1. These subtests were significant at a .05 level.

(a) Auditory decoding and Auditory-vocal association (.427); Auditory attention span for related words (.332); auditory memory functions (.308); and Listening comprehension recall (.539);

(b) Auditory-vocal association and Auditory-vocal automatic (.461); Auditory-vocal sequential (.380); Auditory attention span for unrelated words (.508); Auditory attention span for related words (.401); auditory memory functions (.378); Phonemes (.495); Blends (.414); Primary hearing sounds (.557); and Listening comprehension recall (.514).

(c) Auditory-vocal automatic and Primary hearing sounds (.371); and Listening comprehension recall (.443).

TABLE 40

CORRELATIONS BETWEEN CHILD PERFORMANCES ON TWELVE PRETEST MEASURES OF AUDITORY FUNCTIONING

	Correlational Values for Subtest and Derived Scores											
	1	2	3	4	5	6	7	8	9[a]	10[b]	11[c]	12[d]
1		.427*	.020	.211	.107	.332*	.308*	.103	.258	.231	.061	.539*
2			.461*	.380*	.508*	.401*	.378*	.495*	.414*	.557*	.127	.514*
3				.083	.197	-.156	.103	.134	.274	.371*	.323	.443*
4					.557*	.645*	.470*	.370*	.355*	.214	.205	.246
5						.532*	.408*	.307*	.300*	.220	.087	.421*
6							.419*	.391*	.205	.018	-.068	.242
7								.349*	.364*	.251	.150	.442*
8									.554*	.666*	.687*	.327*
9										.662*	.703*	.244
10											.374*	.265
11												.042
12												

Note: All correlational values were based on an N of 42, with the following exceptions:

[a] Correlations of Blends subtest with other subtests were based on an N of 41.

[b] Correlations of Primary hearing sounds with other subtests were based on an N of 40.

[c] Correlations of Intermediate hearing sounds with other subtests were based on an N of 31.

[d] Correlations of Listening comprehension with other subtests were based on an N of 40, with these exceptions: Blends (N=39); Primary hearing sounds (N=38); and Intermediate hearing sounds (N=30).

*p < .05

TABLE 41

A LISTING OF VARIABLES AND THEIR RESPECTIVE SUBTEST AND DERIVED SCORES FOR AUDITORY FUNCTIONING DESIGNATED IN TABLE 40

Variable	Subtest and Derived Scores
	Illinois Test of Psycholinguistic Abilities
1	Auditory decoding
2	Auditory-vocal association
3	Auditory-vocal automatic
4	Auditory-vocal sequential
	Detroit Tests of Learning Aptitude
5	Auditory attention span for unrelated words (simple score)
6	Auditory attention span for related words
	Stanford-Binet
7	Auditory memory functions
	Murphy-Durrell Reading Readiness Analysis
8	Phonemes (Total)
	Durrell Analysis of Reading Difficulty
9	Blends
10	Primary hearing sounds
11	Intermediate hearing sounds (total sounds in sequence)
12	Listening comprehension recall

(d) Auditory-vocal sequential and Auditory attention span for unrelated words (.557); Auditory attention span for related words (.645); auditory memory functions (.470); Phonemes (.370); and Blends (.355);

(e) Auditory attention span for unrelated words and Auditory attention span for related words (.532); auditory memory functions (.408); Phonemes (.307); Blends (.300); and Listening comprehension recall (.421);

(f) Auditory attention span for related words and auditory memory functions (.419); and Phonemes (.391);

(g) Auditory memory functions and Phonemes (.349); Blends (.364); and Listening comprehension recall (.442);

(h) Phonemes and Blends (.554); Primary hearing sounds (.666); Intermediate hearing sounds (.687); and Listening comprehension recall (.327);

(i) Blends and Primary hearing sounds (.662); and Intermediate hearing sounds (.703);

(j) Primary hearing sounds and Intermediate hearing sounds (.374).

2. With few exceptions, although they were significant, the aforementioned correlations generally tended to be very low. Subtests of auditory sequencing of numbers and verbal information, ranging between .500 and .600, tended to be somewhat more highly

correlated. Also, some subtests of the Murphy-Durrell Reading Readiness Analysis and the Durrell Analysis of Reading Difficulty had higher correlations; they ranged between .500 and .700. These findings appear to indicate that there was a greater similarity in requirements for accomplishing sequencing tasks and in the achievement of specific reading tasks.

3. The observation that Auditory decoding was so infrequently and poorly correlated with other subtests may be an indication of low validity of the subtest. This issue was raised earlier in the discussion of variabilities of child performances.

In light of the nature of the particular task, frequent low correlations of the Auditory-vocal automatic subtests with other subtests may have reflected differences between learning process requirements.

Correlations Between Pretest Measures of Visual and Visuo-Motor Functioning

In addition to measures of auditory functioning, 15 subtests and derived scores involving visual and visuo-motor functioning were selected and their correlations examined. These data are presented in Table 42; subtests and variables are listed in Table 43. These data revealed the following results.

1. These measures were significantly correlated at a .05 level and ranged in value between .600 and .700.

(a) Figure-ground discrimination and Position in space (.718); and Spatial relationships (.773);

(b) Position in space and Spatial relationships (.612);

(c) Spatial relationships and Bender Gestalt reproductions from copying (.613);

(d) Bender Gestalt reproductions from memory and reproductions from copying (.678);

(e) Primary visual memory and Intermediate visual memory (.678).

2. The following measures were significant at the .05 level and ranged in value between .500 and .600.

(a) Visual attention span for objects and Form constancy (.524); Spatial relationships (.527); and Bender Gestalt reproductions from memory (.516);

(b) Visual attention span for letters and Primary visual memory (.588); and Intermediate visual memory (.579);

(c) Figure-ground discrimination and Primary visual memory (.557);

(d) Form constancy and Spatial relationships (.575);

(e) Spatial relationships and visuo-motor functions (.527);

(f) Visuo-motor functions and Bender Gestalt reproductions from memory (.527).

TABLE 42

CORRELATIONS BETWEEN CHILD PERFORMANCES ON FIFTEEN MEASURES OF VISUAL AND VISUO-MOTOR FUNCTIONING

	Correlational Values for Subtest and Derived Scores														
	1	2	3	4	5[a]	6	7	8	9	10	11	12	13	14	15[b]
1		.170	.062	.187	.377*	.199	.357*	.038	.246	.275	.381*	.197	.216	.329*	.126
2			.189	.434*	.209	.274	.223	.199	.427*	.270	.405*	.148	.257	.152	.197
3				.406*	.369*	.087	.407*	.434*	.264	.466*	.478*	.412*	.303	.253	.239
4					.350*	.166	.491*	.524*	.430*	.527*	.372*	.516*	.451*	.134	.117
5[a]						.182	.370*	.291	.199	.310*	.363*	.366*	.225	.588*	.579*
6							.269	.343*	.366*	.191	.206	.073	.065	.094	.121
7								.489*	.718*	.773*	.454*	.436*	.491*	.557*	.208
8									.456*	.575*	.459*	.573*	.386*	.180	.153
9										.612*	.415*	.277	.463*	.319*	.031
10											.527*	.483*	.615*	.466*	.229
11												.527*	.479*	.292	.393*
12													.678*	.070	.062
13														.241	-.025
14															.648*
15															

Note: All correlational values were based on an N of 42, with the following exceptions:

[a] Correlations of the Visual attention span for letters subtest with other subtests were based on an N of 41, with the exception of the Intermediate visual memory (N=38).

[b] Correlations of the Intermediate visual memory subtest with all other subtests were based on an N of

*$p < .05$

TABLE 43

A LISTING OF VARIABLES AND THEIR RESPECTIVE SUBTEST AND DERIVED SCORES FOR VISUAL AND VISUO-MOTOR FUNCTIONING DESIGNATED IN TABLE 42

Variable	Subtest and Derived Scores
Illinois Test of Psycholinguistic Abilities	
1	Visual decoding
2	Visual-motor association
3	Visual-motor sequential
Detroit Tests of Learning Aptitude	
4	Visual attention span for objects (simple score)
5	Visual attention span for letters
6	Disarranged pictures
Frostig Developmental Test of Visual Perception	
7	Figure-ground discrimination
8	Form constancy
9	Position in space
10	Spatial relationships
Stanford-Binet	
11	Visuo-motor functions
Bender Visual Motor Gestalt Test	
12	Reproductions from memory
13	Reproductions from copying
Durrell Analysis of Reading Difficulty	
14	Primary visual memory
15	Intermediate visual memory

3. The following subtests were significant also at a .05 level but were less highly correlated. They ranged between .300 and .500.

(a) Visual decoding and Visual attention span for letters (.377); Figure-ground discrimination (.357); and visuo-motor functions (.381); Primary visual memory (.329);

(b) Visual-motor association and Visual attention span for objects (.434); Position in space (.427); and visuo-motor functions (.405);

(c) Visual-motor sequential and Visual attention span for objects (.406); Visual attention span for letters (.369); Figure-ground discrimination (.407); Form constancy (.434); Spatial relationships (.466); visuo-motor functions (.478); and Bender Gestalt reproductions from memory (.412);

(d) Visual attention span for objects and Visual attention span for letters (.350); Figure-ground discrimination (.491); Position in space (.430); visuo-motor functions (.372); and Bender Gestalt reproductions from copying (.451);

(e) Visual attention span for letters and Figure-ground discrimination (.370); Spatial relationships (.310); visuo-motor functions (.363); and Bender Gestalt reproductions from memory (.366);

(f) Disarranged pictures and Form constancy (.343); and

Position in space (.366);

(g) Figure-ground discrimination and Form constancy (.489); visuo-motor functions (.454); Bender Gestalt reproductions from memory (.436); and reproductions from copying (.491);

(h) Form constancy and Position in space (.456); visuo-motor functions (.459); Bender Gestalt reproductions from memory (.373); and reproductions from copying (.386);

(i) Position in space and visuo-motor functions (.415); Bender Gestalt reproductions from copying (.463); and Primary visual memory (.319);

(j) Spatial relationships and Bender Gestalt reproductions from memory (.483); and Primary visual memory (.466);

(k) Visuo-motor functions and Bender Gestalt reproductions from copying (.479) and Intermediate visual memory (.393).

Summarizing results, these tendencies were apparent. Some of the Frostig subtests and Bender Gestalt dimensions involving visuo-motor written tasks were most highly correlated within and across measures. Likewise, Primary and Intermediate visual memory subtests of the Durrell Analysis, both of which required letter sequencing, were quite highly correlated. Similar tendencies were apparent in less highly correlated subtests, which ranged in value between .500 and .600. In addition, like correlations between auditory subtests, these data revealed a large number of measures which had extremely small degrees of relationship; some of these correlations were significant; many were not significant. At the same time, however, comparisons of these two sets of correlations revealed that visual and visuo-motor functions disclosed a greater number of subtests which were significant and apparently more closely related. This finding may have been a reflection of several factors including the nature of particular tasks, differences in performances of children, characteristics of the particular intellectual functions. In relation to more inclusive intellectual abilities such as language, conceptualization, and perhaps memory, unless tasks were extremely similar in requirement, correlations also would probably be very small.

One further consideration is important to interpretations of these results. As mentioned in prior discussions of variability and multidimensionality of child performances, first evaluation results tended to be less differentiating than second and third evaluation data. It may be that later assessments might reveal closer relationships between measures of these functions.

Implications of Correlational Data

Considerations of these data have been extremely brief; yet they raise several issues in terms of diagnosis and remediation of learning disabilities in children. Among these, the following points perhaps warrant further exploration.

(a) Are some abilities more fundamental than others in the development of later complex process; and on the basis of our current status of assessment, can we identify such relationships in learning processes? Is it possible that such fundamental abilities differ among children who have learning and emotional difficulties?

(b) Although fundamental learning abilities are basic to a development of more complex intellectual functions, to what extent and in what ways are remediation efforts, directed toward fundamental abilities, transferred to more complex learnings?

(c) If such transfer is minimal, are these findings symptomatic of the pathology of learning process disorders or do they reflect more primarily maturational time tables in cognitive development where more fundamental learnings become less likely with age?

(d) Is it possible that cognitive characteristics of individual children reveal much closer correlations between performances than group data have disclosed? Performances of a number of children in this study appear to indicate that some of these important relationships are flooded out with such analyses.

Trend Analysis of Child Performances

The one-way analysis of variance of 53 subtests and derived measures facilitated consideration of at least three principal questions.

(a) Were there significant differences between mean performances of children across the three evaluation periods?

(b) Were there greater changes between first and second or second and third testing sessions?

(c) Did mean performances tend to move in a consistently positive direction? What measures did not follow this pattern?

In the ensuing section, these issues will receive specific consideration. Data of this analysis are presented in Table 46 of Appendix D.

Significant differences in mean performances of children. Examination of these data reveals that there were substantial differences between scores of the majority of subtests across the three evaluation periods and that these were significant at .05 and .01 probability levels. There were some exceptions to these tendencies. They included the following results.

1. Performances of children on these measures did not reach significance at either .05 or .01 probability levels.

(a) Stanford-Binet IQ and auditory memory functions;

(b) Murphy-Durrell Capital letters;

(c) Bender Gestalt reproductions from memory (numbers of simplified figures) and all three derived measures of reproduction from copying;

(d) Durrell Analysis Capital letters and Intermediate visual memory and hearing sounds intrusion scores.

2. Some subtests were significant at only the .05 level.

(a) Murphy-Durrell Phonemes (initial position);

(b) Bender Gestalt reproductions from memory (numbers of fragmented figures);

(c) Durrell Analysis Lower-case letters.

Varying factors appeared to account for these results. Small differences between mean performances of children on Murphy-Durrell subtests and Durrell Analysis Capital and Lower-case letters tasks reflect that at the commencement of the study children were functioning at fairly high levels of performance. Only slight changes in mean performances on the Stanford-Binet auditory memory functions may be indicative of considerable resistance to change of such learning disabilities which, further, perhaps are attributable to difficulties of measurement and implementation of remediation strategies, as well as the specific nature of such learning difficulties. Numerous research studies have reported that it is extremely difficult to change IQ. While there were some positive and negative shifts in performances of children from the first to the third evaluation periods and between those scores and reports in cumulative school records, a large number of children did not reveal substantial shifts. In part, these findings probably reflected stabilities in cognitive patterns of functioning of children. Over the three evaluations, degrees of change in Bender Gestalt measures were quite variable but did not reveal marked differences in achievement of children. While such findings may have been indicative of continued learning difficulties of children, they also may have been partly attributable to the nature of particular tasks which were especially open to influence by determinants other than specific cognitive disabilities. Finally, there were considerable differences in accuracy of recall of letters and hearing sounds tasks on the Durrell Analysis; these changes appeared to be flooded out in group data analyses of these dimensions.

Changes in mean performances between first and second, and second and third evaluations. Gains in achievement were contingent on multiple determinants. Thus, it is not possible to assert with any degree of assurance that changes in performances were directly or primarily contingent on effects of remediation program strategies. Further, while greater shifts in mean performances between second and third than between first and second evaluations are more suggestive of likely strategy impact, considerable caution is advised in advancing such a conclusion. In light of this consideration, the following results are presented.

These measures revealed greater differences between first and second than between second and third evaluations:

(a) Auditory decoding; (b) Visual decoding; (c) Motor encoding; (d) Auditory-vocal association; (e) Visual-motor sequential recall; (f) Total ITPA; (g) Figure-ground discrimination; (h) Bender Gestalt reproductions from memory (satisfactory and simplified figures); (i) Bender Gestalt reproductions from copying (fragmented figures); (j) Durrell Analysis Lower-case letters, Primary visual memory, and Word recognition.

All of the other subtest, derived, and total test measures administered three times revealed varying degrees of change between second and third evaluations which exceeded differences between the first and second evaluations.

The question of why some subtests revealed greater changes between first and second evaluations and others, between second and third sessions seems to be an inevitable one. The following explanations may account for some of these differences.

1. ITPA subtest and total test scores are conspicuous in their predominance of greater changes from first to second evaluations. This observation was made in the context of earlier discussion on the variability and multidimensionality of child performances. For some largely unknown reasons, many of the ITPA perform-

ances of children on the first evaluation were consistently lower than their achievements on the second evaluation and their performances on other somewhat comparable subtests on the first evaluation. Performances of children on the second evaluation seemed to be much more differentiating in terms of learning strengths and weaknesses of children.

In part, these differences may have arisen from heightened anxieties of children, the fact that the ITPA was the first test administered at the commencement of the diagnostic phase of the study, or differences in examiners. In essence, the major point concerning the observation is this: The greater shifts of the majority of ITPA scores were conceived to be somewhat distorted reflections of change in children.

2. Subtests such as the Frostig Figure-ground discrimination subtest and Durrell Analysis Lower-case letter recall were tasks which a large number of children were able to accomplish quite readily. Thus, on the second evaluation, the majority of children were already achieving ceiling levels on these measures; and reflections of further changes on the third evaluation were not feasible.

3. The slightly greater changes of the Durrell Analysis Primary visual memory and Word recognition subtests were somewhat surprising in light of the fact that the first and second admin-

istrations of these subtests were so close in time proximity and the third evaluation was undertaken several months later. Examination of individual test results afford one possible source of explanation for these findings; i.e., children who tended to reveal quite high performances on those subtests on the first evaluation maintained their levels of functioning with gains which were substantial, yet not large enough to override more limited gains of children who continued to change at slower rates. Thus, the marked gains of some children were not clearly reflected in these changes in mean performances.

In addition, it was an interesting observation that performances of children on the Intermediate visual memory subtest, which was similar in task requirement yet quite differently scored, did not reveal this kind of pattern across mean achievements. Specifically, rather than correct-incorrect responses, numbers of letters were recorded. It appeared that the latter procedure provided greater opportunity for determinations of gradual changes in children which were not reflected in scores of the Primary visual memory subtest.

4. Differences between certain dimensions of child performances on the Bender Gestalt, although greater from first to second evaluations, were almost negligible and were significant only with respect to numbers of satisfactory reproductions from

memory.

Direction of change in child performance across the three evaluations. While differences in means of child performances on the majority of subtests and derived measures tended to be significant and almost all of these achievements did move in a consistently positive direction, these two determinations were not synonymous. In other words, some subtests which revealed significant differences in mean performances did not consistently increase over the three evaluations. Among those measures which did disclose significant differences, dropped in mean performances on the second evaluation, and later gained on the third performance were the following subtests and additional dimensions: (a) ITPA Auditory-vocal sequential recall; and (b) Durrell Analysis Intermediate hearing sounds recall (total words, consonants, vowels, and letters in sequence). The fact that all of these dimensions involve various auditory functions is evident. The finding may be reflective of greater instabilities of performances of children on such tasks of sequencing numbers and sounds which are perhaps even less tangible than recall of related words and sentences on the Detroit Tests.

Summary of Findings

The present chapter has considered briefly selected portions of data analyses. These included considerations of: (a) correlations between 12 measures of auditory functioning; (b) correlations between 15 measures of visual and visuo-motor functioning; and (c) trends in mean performances of children over the three evaluation periods. In general, results revealed that intercorrelations of subtests of auditory functioning were quite low. Visual and visuo-motor tasks were somewhat more highly correlated; but there was still a predominance of measures that were not significant at a .05 probability level or revealed extremely small relationships. On both sets of correlations, there were tendencies toward higher correlations between subtests of similar task requirements; e.g., correlations between auditory sequencing tasks, between various reading subtests, or relationships between visuo-motor writing tasks.

Results of the one-way analysis of variance disclosed that there were significant differences at .05 and .01 probability levels between mean performances of the majority of subtests, that these differences were greater between second and third than between first and second evaluations on the majority of measures, and that in most instances mean performances of children moved in a consistently positive direction. The most conspicuous exception to these patterns was evident in relation to various aspects of auditory functioning.

While these tendencies in the trend analysis are somewhat suggestive that remediation strategies did have varying degrees of impact on children, such conclusions should not be assumed without specific consideration of both individual teacher and child variables which facilitated those developments.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Introduction

Frequently associated with placement of children in public school special classes is a failure to achieve levels of expectancy on academic tasks. Until most recent attempts to merge studies in cognitive development and investigations of learning disabilities in children, research efforts have been primarily centered on determinations of high versus low performance, evaluations of limited aspects of learning process dysfunctions or emotional disorders, and assessments of performance gains following intervention experiences. While conclusions are revealing that conditions of mental retardation exist along a widely diversified continuum, they shed little direct insight on more inclusive dimensions of cognitive and affective processes of children termed "mentally retarded" and on characteristics of special class settings, all of which have a substantial influence upon symbolic and conceptual development. In particular, sparse attention has been given to intensive studies of ways in which patterns of cognitive strength, specific learning disabilities as differentiated from global incapacities, extensiveness of total intellectual impairment, emotional disturbances, and teacher variables influence accomplishments on language, reading, and conceptual tasks which are crucial to academic achievement. Of major importance are clinical evaluations of cognitive and affective processes and teacher practices that have bearing on low performances and competency levels of children attending special classes, and investigations of probabilities for change of those determinants of learning in children.

Purposes of the Study

The primary intent of the present investigation was centered on intensive clinical studies of children, their teachers, and educational strategies in selected public school educable special classes. The study had five major purposes:

(a) to differentiate and describe specific learning disabilities of children during the diagnostic phase of the study and following implementation of recommended remediation strategies;

(b) to observe and describe behavioral disturbances of children during the diagnostic phase of the study and during the course of the remediation program;

(c) to observe and describe instructional practices of teachers during the diagnostic phase of the study and during the course of the remediation program;

(d) to examine relationships among: low performances on language, reading, and conceptual tasks; extensiveness of total impairment; severities and types of specific learning disabilities; chronological age; observed behavioral disturbances; and observed instructional practices of respective teachers of children the first diagnostic year;

(e) to examine relationships among: changes in performances on language, reading, and conceptual tasks, specific learning disabilities, related intellectual functions, observed behavioral disturbances, observed instructional practices of teachers; extensiveness of total impairment; and chronological age of children the second intervention year.

Major Assumptions of the Study

Purposes of the study were based on the following assumptions.

(a) Specific learning disabilities in children would accompany varying degrees of mental retardation.

(b) During the diagnostic phase of the study, specific learning disabilities of children would be identifiable on the basis of low performances across numerous measures of language, reading, and conceptual abilities of children.

(c) During the diagnostic year of the study, each of the teachers consistently would reveal instructional practices that were minimally focused on educational needs of individual children in their classes.

(d) During the diagnostic phase of the study, the majority of children would reveal behavioral disturbances on the basis of class observations.

(e) During the course of the remediation program, guidance and supervision of teachers would change their instructional practices to be more in accord with educational needs of individual children.

(f) Remediability of learning difficulties would vary with the extent to which teacher practices were observed to correspond with educational needs of children.

(g) Behavioral disturbances of children which appeared to be associated with frustrations in learning would be diminished as a function of appropriately structured teaching practices.

(h) Remediation strategies would enhance specific learning disabilities of children in relation to extensiveness of total impairment.

(i) Remediation strategies would enhance associated intellectual functions of children in relation to extensiveness of total impairment.

(j) Remediation strategies would enhance general levels of language, reading, and conceptual abilities of children in relation to extensiveness of total impairment.

(k) Remediability of learning difficulties would vary with chronological ages of children; i.e., younger children would make greater gains than older children would reveal.

(l) Remediability of learning difficulties would vary with different types of disabilities.

Methods and Procedures

The Design of the Study

The present investigation was conceived primarily as a two-year case study of children. This intent was reflected in three major aspects of the original design: (a) selection of a small sample of children; (b) extensive diagnostic evaluations; and (c) implementation of a remediation program which embraced a wide spectrum of therapeutic and educational techniques on several developmental levels of performance.

The general plan of the study included three principal phases and the following stages of progress.

1. Preliminary Phase: May-June 1968

(a) An initial sample of 83 children was selected for inclusion in the study.

(b) Data were collected from cumulative school records.

2. Diagnostic Phase: September 1968-June 1969

(a) Final sample selection of 48 children was made.

(b) Extensive classroom observations of children, teachers, and educational strategies; tape recordings of instructional sessions; and the administration of a battery of seven language, reading, perceptual, conceptual, and general intelligence tests were completed.

(c) Learning profiles including 54 ranked variables of chronological age; IQ; mental age; and subtest, derived, and total test scores were compiled for individual children, and clinical data were evaluated in order to delineate specific learning disabilities and cognitive strengths of children. On the basis of these assessments, remediation strategies were conceived.

3. Implementation of the Remediation Program: September 1969-June 1970

(a) A three-day workshop was conducted at Boston University and the plan of the remediation program was presented to teachers.

(b) In September and October, pretest evaluations prior to the commencement of the remediation program were conducted. Children were given the same battery of clinical tests, excluding the Stanford-Binet. Learning profiles for the second evaluation data were compiled and diagnoses of individual children reconfirmed.

(c) Extensive weekly and biweekly observations of classes and follow-up of the development and implementation of the remediation program were maintained.

(d) In May and June, children were re-evaluated on the complete battery of seven clinical tests. Learning profiles for these results were constructed and clinical data analyzed.

Procedures of Subject Selection

In June of 1968, six special classes located in Brookline, Framingham, Quincy, and Wellesley, Massachusetts, judged as representative of middle to upper-middle class communities in the Greater Metropolitan Boston area, were selected for the study. With the exception of one community where two classes were located in a self-contained public school for "retarded" children, the sample was drawn from special classes in elementary public schools. Inclusion of these classes was contingent upon the following criteria:

(a) willingness of a teacher to participate in the study;

(b) commitment of a teacher to the same special class situation for a two-year period;

(c) minimum teacher experience of one year with regular or special class;

(d) the majority of children in a class ranging in projected age, beginning September 1, 1968, between seven and 11-05 years;

(e) a majority of children in a class anticipated to be continuing in September 1968;

(f) according to school administration, a majority of children meeting criteria designated by the Commonwealth description of children in educable special classes.

In September 1968, of a total 83, 48 children in these six classes who met the above criteria of age and participation as of September 1968 were included in the study.

At the close of the first year, there were extensive reorganizations of classes, children, and teachers which precluded continuance of the majority of children with the same teachers. Six children were dropped from the study: Two moved out of state, two were placed in regular second and third grades; one child was placed in a nonparticipating special class; and one child was excluded as a result of incomplete test data. Of the remaining 42 children, only 20 continued in classes and schools of the first year; as a result of newly structured special class programs, only eight remained full time with the same teachers. In addition, only four of the six teachers continued the second year, and five new teachers became involved in the study.

Procedures of Evaluation

Clinical tests and observational strategies. Diagnostic evaluations the first year were based on the administration of seven clinical tests and the use of two instruments for classroom observation. The following tests were included in the initial battery: the experimental version of the Illinois Test of Psycholinguistic Abilities, the Detroit Tests of Learning Aptitudes, Frostig Developmental Test of Visual Perception, Stanford-Binet Intelligence Scale, Bender Visual Motor Gestalt Test, Murphy-Durrell Reading Readiness Analysis, and the Durrell Analysis of Reading Difficulty. Some of these tests were administered in their entirety; others only in part. In some instances, additional subtest dimensions were conceived for evaluation.

Two observational instruments also were selected for purposes of recording such social and emotional behaviors of children in academic settings as their responses to academic tasks, styles of participation in activities, types of responses to their peers and teachers. These instruments were: (a) A Category Scale for Time Sampling of Individual Child Classroom Behavior (Garfunkel, 1967), which classifies child and teacher behavior along seven scales; and (b) A Category System for Analysis of Verbal Behavior (a modification of Amidon & Hunter, 1966; Bales, 1951), which was intended to examine two dimensions of verbal behavior; i.e., the direction of child responses and the type of child responses.

During the second year, similar procedures of evaluation were continued, with a few modifications. With the exception of the Stanford-Binet, which was not given in the second session, all of the clinical tests were readministered prior to the beginning and at the termination of the remediation program. However, as a result of practical and theoretical considerations, an alternative to original observational strategies was pursued; i.e., clinical descriptions of classroom processes.

Data analyses. Data analyses were pursued in terms of four methodologies. These were:

(a) a compilation of learning profiles for three sets of test results of individual children, whereby specific learning disabilities could be operationally defined and differentiated and predominant cognitive strengths distinguished;

(b) a compilation of Stanford-Binet profiles where child performances on individual tasks were ranked as substantially below, moderately below, on a level similar to, moderately above, or extremely above relative positions of mental and chronological ages;

(c) evaluations of individual child performances and emotional behaviors in class and test sessions;

(d) an intercorrelation matrix of all pretest scores, correlations between pretest scores and gain scores over first and third evaluations, and a one-way analysis of variance of child performances. (Only portions of these data were considered in the final presentation; i.e., correlations between 12 measures of auditory functioning, correlations between 15 measures of visual and visuo-motor functioning; and the trend analysis of child performances.)

Procedures of Intervention: The Remediation Program

Central to the remediation program was the contention that all children in the study were capable of acquiring more adaptive cognitive and affective behavior in accordance with their own diverse, coping styles. The intervention program thus had the following central objective: to initiate, assist, and shape selected aspects of learning and growth in children in such ways as to facilitate their coping with, adapting to, and processing of varied and increasingly complex forms of knowledge presented in their academic settings. More specifically, the program was intended:

(a) to increase abilities of children to use symbolic forms of communication (i.e., language and reading) for expression and interpretation of thoughts and ideas;

(b) to increase selected aspects of conceptual abilities of children; i.e., making associations and drawing relationships, classifying, drawing inferences and deductions, making judgments, and comprehending;

(c) to increase single or combined auditory, visual, visuo-motor, and mnemonic functions which constituted specific learning disabilities and appeared to be contributing to language, reading, and conceptual dysfunctions of individual children.

Four principles of clinical teaching comprised a basis for recommendations to teachers toward achieving the aforementioned objectives. These included criteria for task selections in accordance with patterns of intellectual strengths and weaknesses of children and observations of classroom behaviors which appeared to be relevant to individual styles of learning; and criteria for task presentations; i.e., the establishment of predispositions for learning tasks presented to children and appropriate pacing of tasks. It was anticipated that specific strategies would vary considerably with different teaching styles and particular needs of children.

Major Findings of the Study

Classroom observations and analyses of test data yielded the following major findings.

1. In view of at least one aspect of traditional criteria defining mental retardation, current functioning of many children

ran counter to expectations where usually children considered to be "educable" receive IQ scores of 50 to 79. Eight of the 42 children who remained in the study over the two-year period obtained general performance scores on the Stanford-Binet of at least 90. Including this group, almost half of the sample, 17 children obtained scores exceeding 80.

Three of the six children who left the study at the close of the first year had IQs of at least 90; a fourth, who moved to Ohio, received a score of 88.

These patterns of performance were similarly observed in cumulative school record reports of general intelligence evaluations of children, obtained prior to their placement in special classes.

2. On the basis of learning profiles, evaluations of clinical tests, and classroom observations, more prominent cognitive dysfunctions and specific learning disabilities were revealed clearly to an extent that allowed for a designation of particular remediation strategies the second year.

3. With the majority of children, designated specific learning disabilities consisted of combined rather than single intellectual dysfunctions. Such learning disorders accompanied varying degrees of total intellectual impairment among children.

4. Both years achievements among children were variable

to such a degree that it was impossible to discern universal characteristics of cognitive dysfunctioning.

5. The majority of children revealed considerable multidimensionality to their performances on clinical tests. In other words, despite the observation that their performances were variously impaired by greater to lesser numbers and degrees of severity of learning disabilities, dysfunctions of individual children were not uniform and they displayed cognitive strengths as well as weaknesses. Furthermore, mental age and chronological age did not always serve as accurate guides to prediction of these levels of performance. Very young children sometimes showed strengths that surpassed their own mental and chronological ages and performances of much older children. Some older children who displayed fairly high levels of general intelligence performances were more severely impaired in discrete areas and functioned with much greater difficulty than some younger children.

6. The performances of some children did not support the writer's initial contention of a pre-established hierarchal order of skills. For example, some children were able to accomplish complex tasks more easily than others conceived to be a good deal easier.

7. Of the 42 children who remained in the study over a two-year period, 23 consistently manifested symptoms of anxiety,

hyperactivity, and distractibility. These behaviors were of varying degrees of severity, seemed to be variously responsive to teacher interventions, and appeared to bear in diverse ways on learning processes of children.

8. During evaluation sessions of both years, observations revealed that children, given the benefit of relaxed pressures of time, repetition of questions, and encouragement, were willing and able to accomplish tasks which initially they were reticent to attempt.

9. Levels of frustration of children in accomplishing various academic tasks during class sessions seemed to correspond much more closely to factors such as the appropriateness of teacher instruction and personal perceptions of children of their own incapacities than to specific patterns and degrees of severity of learning disabilities or the extensiveness of total impairment.

10. In comparison with first-year results, greater numbers of test performances of children on second and third evaluations more closely approximated their mental and chronological ages.

11. There was considerable variation and positive change in performances of children over the three evaluation periods on subtests of fundamental learning abilities and measures of more general academic achievement. At the same time, however, both classroom observations and test data indicated that predominant

strengths and weaknesses of children remained relatively stable. Moreover, learning functions which were more severely impaired remained quite consistent with or revealed evidence of regression from first-year performances.

Although Stanford-Binet IQ scores of the majority of children remained relatively constant over the two-year period, generally revealing variations of one to five points, performances of nine children displayed changes of six to ten points in positive and negative directions.

12. Although there were substantial changes in emotional behavior of some children the second year, predominant affective tendencies remained fairly stable.

13. Although all of the children displayed some fluctuations in performance, class and test achievements of children whose behavior was characterized by varying degrees of emotional overlay tended to be less consistent and revealed evidences of greater variability than performances of children who did not display such behavior.

14. The variable of chronological age alone was not related in any discernible way to gains in achievement of children.

15. The nature of predominant cognitive strengths of children as well as specific learning disabilities substantially influenced facility in acquisition of reading, language, and concep-

tual skills. In particular, prominent auditory receptive language and conceptual abilities had a significant bearing upon the relative ease and gainful development of reading skills. Strengths in visual and visuo-motor functioning seemed to have less dominant effects in promoting such achievements. Various auditory disorders in children tended to remain quite stable over the two-year period.

16. Multiple lowerings of cognitive abilities and emotional disorders had a marked and mutually deterrent impact on learning which tended to be reflected in substantially lower IQs, evidence of greater numbers of performances on individual subtests below chronological and mental age expectancies, emotionally and socially immature behavior, and slower rates of acquisition of knowledge. In spite of these compounded psychological dysfunctions, children did learn. Moreover, they also displayed widely variant patterns of performance and behavior.

17. Levels of performances of children and emotional behavior varied with teacher attitudes and the nature of teacher-child interactions. Some classes to a much greater extent than others were characterized by excessive anxiety, inattentiveness, and hyperactivity of children. Moreover, behavior of some children changed markedly the second year in response to different teachers.

18. There was a wide degree of variance among sensitivities

and technological competencies of teachers both years. In the main, however, first-year teachers shared a common characteristic of seldom pursuing instruction specifically in accordance with learning strengths and weaknesses of children.

19. Certain dimensions of teacher behavior tended to change to a greater extent than others over the two-year period. Instructional practices relating to task selections and the organization of class instruction revealed evidence of greatest change; task presentations were modified to a lesser degree; and teacher interactions with children remained the most stable.

20. Some teachers the second year who faithfully utilized all recommended materials of the remediation program met learning needs of children far less effectively than other teachers who rarely employed these suggestions but were especially insightful about learning and emotional difficulties of children.

21. In general, correlations between measures conceived as tapping auditory functions tended to be very low. The same kinds of patterns were evident across correlations between measures of visual and visuo-motor functioning; although they reflected a somewhat higher degree of relationship than auditory subtests, the predominance of measures revealed very small correlations at a .05 probability level or were not significant.

Exceptions to these tendencies of low correlations between subtests of the three functions were measures that were similar in task requirement; e.g., auditory sequencing and visuo-motor writing tasks, and some reading subtests.

22. The one-way analysis of variance revealed that generally there were significant differences between mean performances of the majority of subtests over the three testing sessions, that these differences were greater between second and third evaluations, and that they moved in a positive direction.

Conclusions

In accordance with a central purpose of intensive clinical studies of children, teachers, and educational strategies, the present investigation has been primarily concerned with four major considerations: (a) Characteristics of Emotional Behavior and Cognitive Functioning in Children Termed "Mentally Retarded"; (b) Assessments of Learning and Emotional Disorders in Children; (c) Effects of the Remediation Program; and (d) Teacher Characteristics and Their Impact on Learning in Children. On the basis of major findings of the study, the following conclusions regarding these considerations are advanced.

Characteristics of Emotional Behavior and Cognitive Functioning in Children Termed "Mentally Retarded"

Researchers and educators have long recognized that children termed "mentally retarded" display diverse characteristics in learning, performance, and behavior. Yet our educational placements, diagnostic procedures, remediation strategies, and research efforts have been directed by compelling tendencies to view children thus classified as more generally homogeneous than and different from the mainstream of "normal" or otherwise clinically labeled children. Such views have been variously predicated on notions of global retardation, inability to accomplish higher-order academic tasks, unique characteristics of learning dysfunctions, and slow or static rates of knowledge acquisition. Widely variant achievements among children, their multidimensionalities in performances and emotional behavior, frequent observations where children were functioning at or above their chronological age expectancies on specific subtests, and substantial changes in performances and behavior of some children over the two-year period run directly counter to each of these assumptions. Children in this study shared in common an experience of multiple impairments; yet they differed widely in terms of the kinds and severities of specific learning disabilities, prominent cognitive strengths, extensiveness of total intellectual impairment, their emotional characteristics, and responsiveness to teacher attitudes and practices in learning situations. In significant ways, these constellations of variables influenced patterns of language, reading, and conceptual performances, appeared to affect consistencies in learning and strategies for information processing, and largely determined gains in their achievement over the two-year period.

Assessments of Learning and Emotional Disorders in Children

Such psychological characteristics of children have strong implications for diagnostic procedures of assessment. Specifically, in order to grasp the nature and complexities of learning and emotional disorders in children, there seemed to be an imminent need for comprehensive descriptions along several dimensions of child and teacher behavior and the settings within which certain events occur. Caution is needed against placing adamant credence in, basing irrevocable decisions of educational placement on, and generalizing inferences of impairment from test results which frequently change over time, display large measures of variation with different types of stimulus material and task presentation, and often neglect to consider processes of task accomplishment which may be as important as or more revealing than final achievements. The diagnostician must be ever aware that an almost limitless array of variables other than specific cognitive deficits may account for lower performances of children. While such considerations may introduce a substantial degree of frustration and often preclude highly specific interpretations in diagnostic processes, ultimately they may approximate more closely an accurate understanding of certain behavioral manifestations in children.

Effects of the Remediation Program

Determinations of intervention effects are inseparable from questions of the significance of teacher impact to changes in children and degrees to which particular strategies accelerated ongoing processes of change in children. The aura of special programs may be alluring; yet data of this study strongly indicate that employment of particular materials and equipment, reorganization of instructional groups, different physical facilities do not necessarily assure implementation of remediation programs which hold new or different experiences for children. In the final analysis, adaptations of procedures which more closely approximated individual psychological needs of children were primarily contingent on technological competencies and sensitivities of teachers. To the degree that each of the 11 teachers who variously participated in this study over the two-year period was able to key special methodologies to learning strengths and weaknesses of children and their emotional behavior, intended remediation strategies probably had enhancing effects on learning. To the degree that these kinds of insights were not applied, assumptions of facilitative effects cannot be advanced. Thus, extreme caution is warranted in viewing changes in performances of children as direct reflections of particular remediation strategies.

Interpretations of remediation program effects require further qualification in terms of the kinds of changes in children which occurred. Data in no way indicated that at the termination of the two-year period fundamental styles of cognitive functioning and affective behavior had been changed. While this finding seems to lead to the conclusion that basic psychological patterns--in particular, disordered learning abilities--are extremely difficult to alter, these observations were not conceived as precluding such possibilities or as indicating that children did not change in gainful ways.

If the present study lends any insights to probabilities of incrementing intelligent behavior, they inhere primarily in the conclusion that competency levels and learning of children were variable and open to substantial modification. While such variables may or may not always lead to subsequent changes in cognitive and affective styles, they are vital to ways in which children become more able to cope with living and learning.

Teacher Characteristics and Their Impact on Learning in Children

A recurrent theme throughout this exposition has been the contention that teacher characteristics which tended to remain quite stable affected cognitive performances and emotional behavior of children in significant ways. Major influences of teacher sensitivities and technological competencies were consistently reflected in such dimensions of child behavior as levels of frustration and anxiety, motivations to engage in learning processes, inattentiveness, degrees of hyperactivity, and competency levels. Thus, in a very real sense, learning in children in this study was primarily contingent upon not only their abilities but also the potentials of their teachers.

Implications for Future Research

The present study leaves open to future research many implications. These are a few possibilities:

(a) identification and exploration of ways in which varying parameters of teacher behavior and attitudes bear on cognitive and affective learning processes in children;

(b) more intensive investigations of specific ways in which patterns of affective behavior bear on information processing strategies in children;

(c) explorations of the extent and ways that fundamental abilities are transferred to higher-order learnings in conceptual, and oral and written language development;

(d) investigations of the effects of competency levels of performance in enhancing or retarding cognitive development in children;

(e) studies of relationships between processes of task accomplishments and learning disorders in children;

(f) more intensive case studies, based on fewer numbers of children, which attempt to explore in greater depth learning dysfunctions in conceptual, language, and reading development; affective problems; and probabilities for change in disordered cognitive development in response to more pervasive intervention experiences.

APPENDIX A

TABLE 44

ITEM INCLUSION IN DERIVED STANFORD-BINET MEASURES: CONCEPTUAL-LANGUAGE, VISUO-MOTOR, AND AUDITORY MEMORY FUNCTIONS

Function	Item	Year Level
Conceptual-Language	Similarities and Differences	
	Pictorial	IV-6
	Pictorial	V
	Verbal (Differences)	VI
	Verbal (Similarities)	VII
	Verbal (Similarities and Differences)	VIII
	Verbal (Similarities)	XI
	Verbal (Reconciliation of Opposites)	XIV
	Verbal Analogies	IV-6
		VI
		VII
	Absurdities	
	Picture	VII
	Picture	XII
	Verbal	XIII
	Verbal	IX
	Verbal	XI
	Verbal	XII
	Comprehension	VII
		VIII
	Problem Situation	XI
	Problems of Fact	XIII
	Reasoning	XIV
	Minkus Completion	XII
	Dissected Sentences	XIII
	Induction	XIV
	Ingenuity	XIV
	Vocabulary	V
		VI
		VIII
		X
		XII
		XIV
	Naming	X

(continued on next page)

TABLE 44 (continued)

Function	Item	Year Level
Visuo-Motor	Picture Completion	V
	Paper Folding: Triangle	V
	Copying Square	V
	Patience: Rectangle	V
	Maze Tracing	VI
	Copying Diamond	VII
	Paper Cutting	IX
	Block Counting	X
	Memory for Designs	XI
	Plan of Search	XIII
	Bead Chain Memory	XIII
	Orientation: Direction	XIV
Auditory Memory	Digits Forward	VII
		X
	Digits Reversed	VII
		IX
		XII
	Sentences	XI
		XIII
	Stories	VIII
	Rhymes	IX

Note: Items should not be conceived as including only specified functions.

APPENDIX B

INTELLECTUAL FUNCTIONS

CHILD 42	3	3-6	4	4-6	5	6	7	8	9	10	11	12	13	14
AUDITORY Numbers	A						6		6	6		4		
VISUAL	2 4	1 3 4 5	1 4 5	3 A	5									
VISUO-MOTOR Shapes, Designs	5				4		③		3		1	A		
Visual Planning	1 3	2 5			2 6	⑥			1	②			① A	
MEMORY Short-term Aud.														
Sentences											4		3	
Digits forward	A						6			6				
Digits reversed							A		6			4		
Story recall								②						
Short-term Visual	4								3		1	A	6	
Long-term						①		① ⑥		1 ⑤	3	1 ⑤	2	1
LANGUAGE Auditory Receptive		6		4	3	①	④	⑤	2	1		1	④	1
Visual Receptive	2	4	1 4	A		⑤	①					3		
Expressive						①		① ⑤	2	1 ⑤	2 3	1 2	2	1
Association				2		⑥ ②	② ⑤	④			⑥			6
CONCEPTUAL Similarities & Differences						②	②	④			⑥			6
Verbal Absurdities								⑨	2	A	2	2		3
Abstract Words										⑨	3	⑤	2	6

FIG. 27. Stanford-Binet Profile (adapted from Valett, 1965).

Note.- Not all items on the Stanford-Binet have been included in the profile.

Numbers designated in the profile correspond with test item numbers on the Stanford-Binet.

Circled items indicate items successfully accomplished.

Vertical solid lines indicate basal and ceiling levels.

Broken blue and red lines indicate respectively MA and CA levels at test time.

APPENDIX C

TABLE 45

A FEW SUGGESTED MATERIALS, RESOURCES, AND EQUIPMENT FOR THE REMEDIATION OF LEARNING DISORDERS

Sources of Disabilities	Suggested Materials, Resources, and Equipment
Visual and Visuo-motor Disorders	Ruth Cheves Visual-Motor Perception Teaching Materials Erie Program 1--Perceptual-Motor Teaching Materials Teaching Resources 334 Boylston Street Boston, Massachusetts Montessori Materials Pink Tower Geometric Cabinet Cylinders Red Stair Broad Stair Teaching Aids Division of A. Daigger & Co. 159 West Kinzie Street Chicago, Illinois Frostig Program for the Development of Visual Perception Follett Publishing Co. Chicago, Illinois Visual Perception Skills (Filmstrips) Educational Activities, Inc. Freeport, New York Detect: A Sensorimotor Approach to Visual Discrimination Science Research Associates, Inc. 259 East Erie Street Chicago, Illinois

(continued on next page)

TABLE 45 (continued)

Sources of Disabilities	Suggested Materials, Resources, and Equipment
Language and Auditory Disorders	*Auditory Discrimination in Depth* Teaching Resources 334 Boylston Street Boston, Massachusetts
	Language Experiences in Reading Encyclopaedia Britannica Education Corporation 425 North Michigan Avenue Chicago, Illinois
	Peabody Language Development Kits, I, II, III 720 Washington Avenue Minneapolis, Minnesota
	Language Master Bell and Howell Corporation 6800 McCormick Road Chicago, Illinois
	McGinnis Association Method Alexander Graham Bell Association for the Deaf Washington, D. C.
Written Language Disorders	Phonovisual Method Phonovisual Products, Inc. Box 5625 Washington, D. C.
	Sullivan Programmed Reading Series Webster Division McGraw-Hill Manchester, Missouri
Gross Motor Sensory-Motor Perceptual-Motor Language Conceptual Social Skills	Valett, R. E. *A Handbook of Psychoeducational Resource Program* Fearon Publishers Palo Alto, California

Note: Other resources utilized are included in the Reference section.

APPENDIX D

TABLE 46

ONE-WAY ANALYSIS OF VARIANCE WITH REPEATED MEASURES: TRENDS IN PERFORMANCES OF CHILDREN ON SEVEN CLINICAL TESTS OVER THE TWO-YEAR PERIOD

Variable	N	Means and Standard Deviations			F
		Evaluation Period			
		1	2	3	
Stanford-Binet					
IQ	40	79.83 (9.41)		80.65 (10.24)	1.33
Mental Age	40	96.68 (13.75)		107.95 (14.79)	90.56 ***
Conceptual-Language Functions	41	71.56 (39.06)		109.24 (52.66)	61.57 ***
Visuo-Motor Functions	41	26.63 (18.24)		38.49 (24.67)	20.59 ***
Auditory-Memory Functions	41	17.51 (15.22)		18.05 (14.26)	0.08
Illinois Test of Psycholinguistic Abilities					
Auditory Decoding	40	21.70 (6.70)	26.45 (5.10)	30.13 (3.66)	49.56 ***
Visual Decoding	40	14.68 (3.01)	17.25 (2.64)	19.18 (1.87)	51.17 ***
Auditory-Vocal Association	40	17.85 (2.84)	19.63 (2.88)	21.23 (2.19)	55.82 ***
Visual-Motor Association	40	16.00 (4.76)	18.00 (3.99)	22.03 (2.54)	34.76 ***

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TABLE 46 (continued)

Variable	N	Means and Standard Deviations			F
		Evaluation Period			
		1	2	3	
Illinois Test of Psycholinguistic Abilities					
Vocal Encoding	40	15.95 (4.90)	18.65 (5.09)	23.60 (4.87)	38.97 ***
Auditory-Vocal Automatic	40	14.80 (3.23)	15.13 (3.59)	17.73 (2.85)	12.63 ***
Motor Encoding	40	13.58 (3.13)	18.38 (4.01)	19.40 (3.00)	54.17 ***
Visual-Motor Sequential	40	11.70 (2.87)	21.98 (6.12)	22.60 (5.56)	99.88 ***
Auditory-Vocal Sequential	40	20.51 (6.32)	15.30 (3.83)	17.40 (4.30)	13.65 ***
Total ITPA	40	146.73 (22.48)	171.00 (19.48)	193.03 (19.82)	244.78 ***
Frostig Developmental Test of Visual Perception					
Figure-Ground Discrimination	40	17.78 (3.59)	18.48 (2.86)	18.93 (2.72)	7.80 ***
Form Constancy	40	10.93 (3.06)	11.18 (3.32)	14.10 (2.10)	30.39 ***
Position in Space	40	6.70 (1.40)	6.88 (0.98)	7.33 (0.85)	7.55 ***
Spatial Relationships	40	6.05 (1.76)	6.23 (1.33)	6.78 (1.21)	11.79 ***

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TABLE 46 (continued)

Variable	N	Means and Standard Deviations			F
		Evaluation Period			
		1	2	3	
Detroit Tests of Learning Aptitude					
Auditory Attention Span--Unrelated Words (S)	40	36.60 (5.40)	38.55 (5.13)	42.53 (5.71)	36.30 ***
Auditory Attention Span--Unrelated Words (W)	40	181.63 (32.76)	192.40 (30.43)	218.03 (36.79)	31.70 ***
Auditory Attention Span--Related Words	40	38.65 (12.34)	39.03 (12.73)	46.88 (12.45)	36.84 ***
Visual Attention Span--Objects (S)	40	38.35 (8.85)	40.18 (8.70)	47.58 (7.50)	36.92 ***
Visual Attention Span--Objects (W)	40	196.58 (54.77)	206.80 (52.80)	252.90 (45.51)	33.71 ***
Visual Attention Span--Letters	40	43.95 (7.76)	44.70 (8.02)	51.88 (9.76)	27.00 ***
Disarranged Pictures	40	12.65 (8.09)	14.50 (9.81)	19.75 (9.88)	10.96 ***
Murphy-Durrell Reading Readiness Analysis					
Capital Letters	40	25.43 (2.08)	25.35 (2.08)	25.88 (0.64)	3.17
Lower-case Letters	40	24.15 (3.06)	24.68 (2.33)	25.28 (1.84)	8.24 ***
Phonemes (Initial Position)	40	36.55 (3.54)	36.60 (2.76)	37.73 (0.71)	4.57 *
Phonemes (Final Position)	40	8.85 (1.42)	8.90 (1.72)	9.80 (0.51)	10.56 ***

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TABLE 46 (continued)

Variable	N	Means and Standard Deviations			F
		Evaluation Period			
		1	2	3	
Murphy-Durrell Reading Readiness Analysis					
Phonemes (Total)	40	45.40 (4.55)	45.50 (4.17)	47.53 (1.10)	8.23 ***
Bender Visual Motor Gestalt Test					
Satisfactory Gestalts--Memory	41	1.46 (1.82)	2.15 (1.82)	2.24 (1.92)	7.63 ***
Simplified Gestalts--Memory	41	6.56 (1.64)	6.05 (1.58)	6.12 (1.67)	2.55
Fragmented Gestalts--Memory	41	0.98 (1.30)	0.81 (1.06)	0.63 (1.08)	3.31 *
Satisfactory Gestalts--Perception	41	2.51 (2.10)	2.44 (1.53)	3.02 (2.36)	2.72
Simplified Gestalts--Perception	41	5.73 (1.84)	5.93 (1.24)	5.37 (2.10)	2.08
Fragmented Gestalts--Perception	41	0.76 (1.19)	0.63 (1.10)	0.61 (1.32)	0.69
Durrell Analysis of Reading Difficulty					
Capital Letters	23	26.00 (-0.00)	26.00 (-0.00)	26.00 (-0.00)	0.00
Lower-case Letters	23	25.44 (1.01)	25.78 (0.59)	26.00 (-0.00)	5.52 *
Blends	23	13.52 (3.66)	14.26 (3.27)	15.61 (1.64)	7.57 ***
Primary Visual Memory	23	13.39 (3.19)	15.35 (2.04)	17.17 (1.95)	26.88 ***

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TABLE 46 (continued)

Variable	N	Means and Standard Deviations			F
		Evaluation Period			
		1	2	3	
Durrell Analysis of Reading Difficulty					
Primary Hearing Sounds	23	25.39 (2.95)	26.39 (2.67)	28.48 (1.14)	14.55 ***
Intermediate Visual Memory--Total Words	23	1.48 (2.30)	1.57 (2.02)	3.87 (3.33)	18.61 ***
Intermediate Visual Memory--Total Letters	23	71.52 (22.34)	74.22 (20.66)	94.70 (21.42)	33.21 ***
Intermediate Visual Memory--Letters in Sequence	23	66.61 (22.56)	69.83 (20.71)	91.13 (22.11)	35.95 ***
Intermediate Visual Memory--Intrusion	23	12.13 (10.15)	12.04 (10.03)	10.39 (8.18)	0.33
Intermediate Hearing Sounds--Total Words	23	2.96 (3.30)	1.96 (2.42)	5.52 (3.69)	13.21 ***
Intermediate Hearing Sounds--Total Consonants	23	62.65 (11.40)	58.44 (16.07)	69.78 (4.86)	11.28 ***
Intermediate Hearing Sounds--Total Vowels	23	25.96 (7.52)	24.74 (6.87)	32.17 (4.64)	15.12 ***
Intermediate Hearing Sounds--Sounds in Sequence	23	86.74 (17.35)	80.39 (22.66)	99.87 (10.50)	15.02 ***
Intermediate Hearing Sounds--Intrusion	23	12.70 (8.48)	16.83 (8.93)	11.57 (8.41)	2.78

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TABLE 46 (continued)

Variable	N	Means and Standard Deviations			F
		Evaluation Period			
		1	2	3	
Durrell Analysis of Reading Difficulty					
Word Recognition	23	41.91 (19.15)	51.26 (17.59)	59.87 (15.52)	34.25 ***
Oral Reading Recall	23	18.70 (5.82)	22.61 (6.34)	26.48 (6.76)	20.18 ***
Silent Reading Recall	23	42.87 (36.93)	47.96 (32.76)	76.44 (29.53)	20.92 ***
Listening Comprehension Recall	23	22.00 (5.25)	23.13 (5.51)	26.35 (6.16)	7.23 ***

* $p < .05$
** $p < .01$

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